

SCALERS AND SIGNAL PROCESSORS

DVS 605

HDCP-Compliant Scaler
(with Seamless Switching)



Extron Electronics
INTERFACING, SWITCHING AND CONTROL

Safety Instructions

Safety Instructions • English

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ATTENTION: This symbol, , when used on the product, is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.

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Instructions de sécurité • Français

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Korean

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This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. The Class A limits provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause interference; the user must correct the interference at his own expense.

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Conventions Used in this Guide

Notifications

The following notifications are used in this guide:

DANGER: A danger indicates a situation that **will** result in death or severe injury.

WARNING: A warning indicates a situation that has the **potential** to result in death or severe injury.

CAUTION: A caution indicates a situation that **may** result in minor injury.

ATTENTION: Attention indicates a situation that may damage or destroy the product or associated equipment.

NOTE: A note draws attention to important information.

TIP: A tip provides a suggestion to make working with the application easier.

Software Commands

Commands are written in the fonts shown here:

```
^AR Merge Scene,,0p1 scene 1,1 ^B 51 ^W ^C  
[01] R 0004 00300004000080000600 [02] 35 [17] [03]
```

Esc [X1] * [X17] * [X20] * [X23] * [X21] CE ←

NOTE: For commands and examples of computer or device responses mentioned in this guide, the character “Ø” is used for the number zero and “0” represents the capital letter “o.”

Computer responses and directory paths that do not have variables are written in the font shown here:

```
Reply from 208.132.180.48: bytes=32 times=2ms TTL=32  
C:\Program Files\Extron
```

Variables are written in slanted form as shown here:

```
ping xxx.xxx.xxx.xxx -t  
SOH R Data STX Command ETB ETX
```

Selectable items, such as menu names, menu options, buttons, tabs, and field names are written in the font shown here:

From the **File** menu, select **New**.

Click the **OK** button.

Specifications Availability

Product specifications are available on the Extron website, www.extron.com.

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Introduction

This manual contains information about the Extron DVS 605 scalers with instructions for experienced installers on how to install, configure, and operate the equipment.

In this manual the terms “DVS,” “digital video scaler,” and “scaler” are used interchangeably and refer to any DVS 605 model.

DVS 605 Series Description

The DVS 605 series of digital video scalers is comprised of:

- DVS 605, standard model
- DVS 605 A, with audio switching
- DVS 605 D, with 3G/HD-SDI output
- DVS 605 AD, with 3G/HD-SDI output and audio switching

All models are full rack width, and are available with optional 3G/HD-SDI outputs (DVS 605 D and DVS 605 AD) and balanced/unbalanced audio (DVS 605 A and DVS 605 AD).

All models are high performance video scalers that include three HDMI inputs, two universal analog video inputs, and simultaneous HDMI and analog high resolution outputs. The DVS 605 models accept a wide variety of video formats including HDMI with HDCP, HDTV, RGB, and standard definition video. They feature advanced Extron video signal processing with 1080i de-interlacing, Deep Color processing, and true seamless switching for professional-quality presentations. The DVS 605 models offer flexible control options including Ethernet, RS-232, USB, hardwired IR, and contact closure.

The five inputs of all DVS 605 models accommodate a variety of sources. The analog inputs can automatically detect and process RGB computer-video, HDTV, component video, S-video, and composite video. The DVS 605 provides the capability to integrate digital and analog video devices, with HDCP compliance to enable integration of Blu-Ray Disc players and cable or satellite HD receivers. Auto-switching between inputs streamlines system operation as well as integration with presentation switchers or matrix switchers.

Output scan rates are available from VGA (640x480) to 1920x1200 resolution, as well as HDTV at 720p, 1080i, 1080p/60 Hz, and 2k/60 Hz.

NOTE: See the [Resolution and Refresh Rates table](#) on page 18 for a complete list.

The DVS 605 models feature EDID Minder and Key Minder. EDID Minder automatically manages Extended Digital Identification Data (EDID) communications between the display device and all the HDMI and VGA computer-video input sources.

For HDMI signals with protected content, Key Minder authenticates and maintains continuous HDCP encryption between input and output devices to ensure quick and reliable switching in professional AV environments.

DVS 605 models with audio switching feature HDMI audio embedding and de-embedding. Any input audio signal can be embedded onto the HDMI output. DVS 605 audio models can also extract embedded HDMI audio to analog and digital S/PDIF outputs. The DVS 605 AD, with audio switching plus 3G-SDI/HD-SDI output, can embed up to eight channels of audio onto the SDI output.

Licensed Third-party Software Used in the DVS 605

The DVS 605 uses various licensed third-party software during operation. To view details about third-party packages and associated licensing, click the **License Information** button on the Unit Information page of the Default web pages (see the [Unit Information Page](#) on page 82). The DVS 605 License Information dialog box opens.

To view a copy of a listed package license, in the dialog box, click the link in the License column for the relevant package. This opens in a separate window a copy of the package license.

Click **Close** to close the dialog box.

The table below lists the licensed third-party software used by the DVS 605.

NOTE: Licensed third-party software used by the DVS 605 is subject to change without notice.



Licensed Third-party Software Used in the DVS 605			
Package	License	Package	License
avahi	GNU GPL v2.1	libpng	libpng license
bstrib	BSD	lighttpd	BSD
busybox	GNU GPL v2	Linux	GNU GPL v2
bzip2	BSD	lua	MIT
cjson	MIT	lua-cjson	MIT
expat	BSD	luafilesystem	MIT
ExtJS4	Sencha Commercial License	luasocket	MIT
fcgi	fcgi	luastruct	MIT
freetype	Free Type License	mtd	GNU GPL v2
gnupg-1.4.7	GNU LGPL v2.1	ncurses	MIT
gpgme	GNU LGPL	openssh	BSD
ifplugd	GNU GPL	openssl	OpenSSL
jpeg	libjpeg	PAM	BSD
libassuan	GNU LGPL	pcre	BSD
libcGCC 3.2.3	GNU LGPL v2.1	psmisc	GNU GPL v2
libcurl	ICS	qt	GNU LGPL v2.1
libdaemon	GNU GPL v2.1	socat	GNU GPL v2
libdnet	BSD	spawn-fcgi	BSD
libgpg	GNU GPL v2.1	sqlite	Public Domain
libcap	BSD	xinetd	Custom
net-snmp	BSD		

Key Features

Video Inputs

- **Three HDMI and two universal analog video inputs** — The two universal 15-pin HD inputs automatically detect incoming RGB, HD component video, YUVi, S-video, or composite video signals. The DVS 605 allows for seamless switching between HDMI and analog video sources.
- **Auto input format detection** — For the universal analog video inputs, the DVS 605 detects the incoming signal format, automatically reconfiguring the scaler to provide the appropriate decoding and signal processing.
- **Auto-switching between inputs** — The DVS 605 can automatically switch between input sources. The unit can be set up to automatically switch to an active input, by giving priority to the highest active input (5→1), or to the lowest active input (1→5). This allows for simple, automated control of the DVS 605 when a control system is not in use.

Auto Switch feature detects “active” video inputs by the presence of valid Horizontal and Vertical sync inputs, and not by the presence of an input cable, or +5 VDC from a source that is currently not outputting active video. Using simultaneous video input detection on all inputs, the DVS 605 will switch to the active input depending on the configured order of precedence (high→low vs. low→high).

With auto-switching, the DVS 605 can accommodate additional inputs when connected to the outputs of a larger presentation switcher, or can be used for unmanaged switching, or as an upstream matrix switcher.

NOTE: When Auto Switch mode is active, PIP mode cannot be enabled. Similarly, if PIP mode is currently active, Auto Switch mode cannot be enabled.

- **True seamless switching** — Seamless cut and dissolve transition effects are available for inputs 1 to 4. Input 5 features glitch-free switching with a fade through to black.

Video Outputs

- **3G/HD-SDI output** — Active only if the current resolution is set to 720p, 1080i, 1080p, or 2k 23.98/24/25 Hz. All video outputs (HDMI, VGA, SDI) share a common output resolution and display the same content.
- **Simultaneous scaled outputs for HDMI, HD-SDI, and analog RGB or HD component video** — HDMI and high resolution analog RGB or component video outputs are available for driving two displays.
- **Selectable output rates** — Available output rates include computer video (640x480) up to 1920x1200, HDTV rates up to 1080p/60 Hz, and 2048x1080 (2k/60 Hz).
- **Picture-in-picture (PIP)** — For inputs 1 to 4, the DVS 605 provides unrestricted two-window display of standard definition and high resolution digital and analog video sources. Multiple PIP presets are available, including side-by-side windows. The main and PIP windows can be dynamically sized, positioned, and magnified. In audio models, audio switching can be set to follow either the main or PIP window.

Audio

- **Audio switching** — The DVS 605 A and DVS 605 AD feature audio switching for five analog stereo balanced or unbalanced inputs.
- **Output volume control** — DVS 605 audio models provide master volume control. Fixed and variable line level outputs are available, and each output can be balanced or unbalanced. Stereo input signals can be output as dual mono. The DVS 605 audio models also include a S/PDIF digital audio output.
- **Audio input gain and attenuation** — Gain or attenuation can be adjusted for each analog audio input to eliminate noticeable differences when switching between sources.
- **Audio breakaway** — Provides the capability to break an analog audio signal away from its corresponding video signal and route to the audio outputs, allowing the analog audio channels to be operated as a separate switcher.
- **Audio switching transitions** — A transition technique can be applied during switches that lowers the audio of the switched-out source while simultaneously bringing up the audio of the activated source. The duration of the audio crossfade matches the duration of the video switching transition.
- **Integrated audio delay** — The DVS automatically delays all analog and digital audio inputs to compensate for internal video processing delay. Occasionally additional audio delay is required to account for other signal processors, scalers, or display devices in a system. For these situations, the DVS 605 offers an additional 0-255 ms static global audio delay that can be set via SIS command or internal web pages to eliminate audio “lip sync” issues.
- **HDMI audio embedding and de-embedding** — For DVS 605 models with audio, analog input audio signals can be embedded onto the HDMI output signal. The DVS 605 can also extract PCM embedded HDMI audio signals. Encoded bitstream audio for Dolby® Digital or DTS® Digital Surround can be passed to the HDMI and S/PDIF outputs.

General

- **HDCP compliance** — features include data rates up to 6.75 Gbps, Deep Color, and HD lossless audio formats.
- **HDCP authentication and signal presence confirmation** — The DVS 605 provides real-time verification via RS-232 or Ethernet of the HDCP status for each digital video input and output. This allows for signal and HDCP verification through USB, RS-232, or Ethernet, providing feedback to a system operator or helpdesk support staff.
- **HDCP visual confirmation** — This provides a green signal when encrypted content is sent to a non-compliant display, providing immediate visual confirmation that protected content cannot be viewed on the display.
- **Key Minder** — This feature continuously verifies HDCP compliance for quick, reliable switching. It authenticates and maintains continuous HDCP encryption between input and output devices to ensure quick and reliable switching while enabling simultaneous distribution of a single source signal to one or more displays.
- **Advanced scaling engine** — The DVS 605 features a high performance 30-bit scaling engine with the ability to scale high resolution computer-video and HDTV as well as standard definition video up or down in resolution.
- **EDID Minder** — This feature automatically manages EDID communication between connected devices, ensuring all sources power up properly and reliably output content for display.

- **AFL - Accu-RATE Frame Lock** — A patented technology exclusive to Extron that eliminates image tearing caused by frame rate conversion.
- **Image freeze control** — A live image can be frozen using control via USB, RS-232 serial, Ethernet, or IR control.
- **Auto-Image setup** — When activated, the unit automatically detects the resolution of the incoming video signal and sets the total pixels, active pixels, and active lines, as well as the horizontal and vertical starting points.
- **Auto Input Memory** — When activated, the DVS 605 automatically stores size, position, and picture settings based on the incoming signal. When the same signal is detected again, these image settings are automatically recalled from memory.
- **On-screen display** — The DVS 605 features an on-screen display that displays status information of the currently selected input.
- **On-screen input labels** — An on-screen text label may be assigned to each input. The label can be up to 16 characters and input via RS-232 or Ethernet.
- **Power screen saver mode and standby modes** — The DVS 605 can be set to automatically mute video and sync output to the display device when no active input signal is detected. This allows the projector or flat-panel display to automatically enter into standby mode to save energy and enhance lamp or panel life.
- **Picture controls** — These include brightness, contrast, color, tint, and detail, as well as horizontal and vertical positioning, and sizing. 16 user memory presets are available for each input to store all image settings.
- **Automatic 3:2 and 2:2 pulldown detection** — The DVS 605 offers advanced film mode processing techniques that help maximize image detail and sharpness for NTSC, PAL, and HDTV 1080i sources that originated from film.
- **Motion adaptive 1080i and SD de-interlacing** — The DVS 605 provides high performance de-interlacing for 1080i and standard definition signals from sources including cable or satellite set-top boxes, delivering optimized image quality through advanced motion compensation.
- **Aspect ratio control** — The aspect ratio of the video output can be controlled by selecting a Fill mode, which provides a full screen output, or a Follow mode, which preserves the original aspect ratio of the input signal.
- **Quad standard video decoding** — The DVS 605 uses a digital, 3D adaptive comb filter to decode NTSC 3.58, NTSC 4.43, PAL, and SECAM signals for integration into systems worldwide.
- **Internal test patterns for calibration and setup** — The DVS 605 offers 14 test patterns; crop pattern, crosshatch, 16 bar grayscale, color bars, alternating pixels, ramp, white field, 4 x 4 crosshatch, and four aspect ratio patterns – 1.33, 1.78, 1.85, and 2.35.
- **Optional 3G/HD-SDI output with genlock** — This output complies with SMPTE 292M and 424M, and ITU digital video standards. Genlock allows synchronization to an external reference signal for integration into broadcast and production applications.
- **Front panel security lockout** — This feature locks out all front panel functions except for input selection; all functions however, are available through USB, RS-232, or Ethernet control.
- **Hardwired IR connection** — The DVS 605 features a rear panel hardwired IR port for connection to Extron MediaLink Controllers, IP Link Control Processors, or IR receivers for additional control flexibility.
- **Ethernet monitoring and control** — The DVS 605 can be controlled and proactively monitored over a LAN, WAN, or the Internet. An intuitive web interface is included for setup and control.

- **RS-232 control port** — Using serial commands, the DVS 605 can be controlled and configured via the embedded web pages, or integrated into a control system. Extron products use the SIS - Simple Instruction Set command protocol, a set of basic ASCII code commands that allow for quick and easy programming.
- **Front panel USB configuration port** — Enables easy configuration without having to access the rear panel.
- **Contact closure ports** — These can be used for external control of source switching.
- **Rack-mountable** — The DVS 605 has a 1U, full rack width metal enclosure.
- **LockIt HDMI cable lacing brackets** — These brackets are included and are used to secure HDMI cables to the device.
- **Internal universal power supply** — The 100-240 VAC, 50-60 Hz, international power supply provides worldwide power compatibility.

Controlling the DVS 605

All DVS 605 Series units can be controlled using one or more of the following methods:

- The front panel controls.
- A computer, a touch screen panel, or any other device that can send and receive serial communications through the USB, RS-232 or Ethernet port. The Extron Simple Instruction Set (SIS) is a set of simple keystroke commands that can be used with any such devices.
- Embedded web pages provide a web browser-style interface for controlling the scaler from a computer over a LAN network.
- Hardwired IR.
- Ethernet control via IP Link, enabling the scaler to be controlled and actively monitored over a LAN, WAN, or the Internet.

Rear Panel Connections

This section describes how to connect cables to a DVS 605 scaler.

Rear Panel Cabling

The illustration below shows all the possible rear panel features of the audio (DVS 605 A and DVS 605 AD) and the non-audio (DVS 605 and DVS 605 D) models.

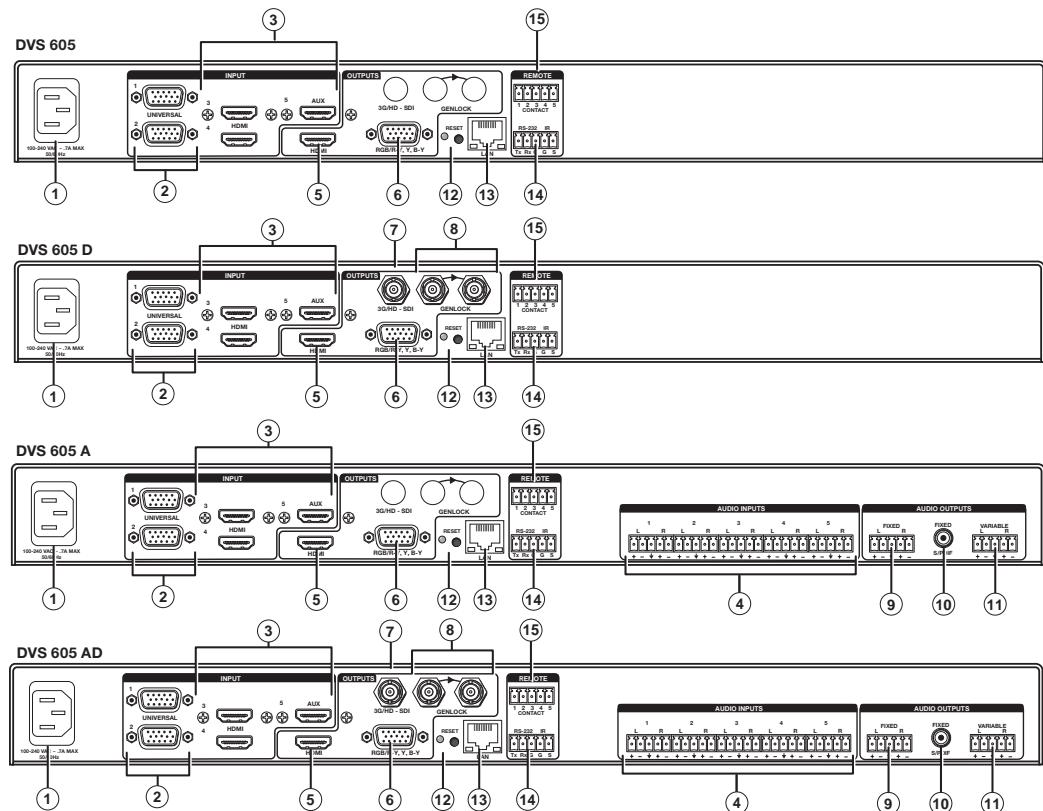


Figure 1. DVS 605 Rear Panel Features — All Models

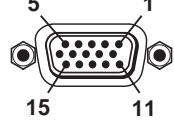
Power and video input connections	Output and control connections
<p>① AC power connector</p> <p>② Universal analog 15-pin VGA connectors — inputs 1 and 2</p> <p>③ HDMI connectors — inputs 3-5 (Note: PIP is not available on input 5)</p> <p>④ Audio 5-pole captive screw connectors — inputs 1-5 (audio models only)</p>	<p>⑤ HDMI connector</p> <p>⑥ RGB/R-Y, B-Y component 15-pin VGA connector</p> <p>⑦ 3G/HD-SDI connector (optional) (SDI models only)</p> <p>⑧ Genlock connectors — input and loop (SDI models only)</p> <p>⑨ Audio out (fixed), 5-pole captive screw connector (audio models only)</p> <p>⑩ RCA audio (S/PDIF) out connector (audio models only)</p>

① **Power input** — Connect the standard IEC power cord from a 100 to 240 VAC, 50-60 Hz power source into this connector. The front panel control and input selection buttons light in sequence during power-up.

② **Inputs 1 and 2** — Connect suitable inputs to these two universal analog input ports (15-pin HD [VGA] connectors) for auto-detection of RGB, HD component video, YUVi, S-video, or composite video signals.

These universal analog input ports can be configured to accept RGB (RGBHV, RGBs), component video (bi- or tri-level), S-video, or composite video signals. The default setting is for auto detect. The table below shows the pinouts for each format type on the 15-pin HD (VGA) connector. The 15-pin HD supports EDID emulation.

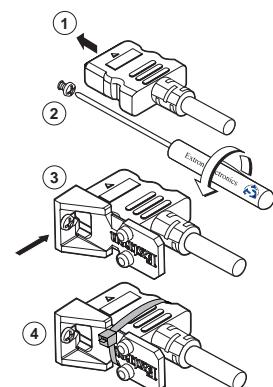
Pinout Table for 15-pin HD Connector					
Pin	RGBHV	RGBs	Component	S-video	Composite
1	Red	Red	R-Y		
2	Green	Green	Y	Luma	Video
3	Blue	Blue	B-Y	Chroma	
4	No Connection	No Connection			
5	No Connection	No Connection			
6	Red Return	Red Return	R-Y Return		
7	Green Return	Green Return	Y Return	L Return	Video Return
8	Blue Return	Blue Return	B-Y Return	C Return	
9					
10	Ground	Ground			
11	No Connection	No Connection			
12	EDID/DDC	EDID/DDC			
13	H Sync	C Sync			
14	V Sync				
15	EDID/DDC	EDID/DDC			



③ **Inputs 3 to 5** — Connect HDMI sources to these three HDMI connectors. Audio from the HDMI inputs can be de-embedded from the HDMI source. This allows the user to choose to select audio either from the HDMI inputs or the analog audio captive screw inputs. Once an audio source is selected, the unselected source is disabled. The default selection is 2-channel digital audio from the HDMI inputs.

Connect up to three digital HDMI and DVD-D inputs to the HDMI connectors ③. Connect DVI-D sources using an adapter cable and secure the connectors to the DVS using the LockIt™ bracket as follows:

1. Plug the HDMI cables into the panel connections.
2. Loosen the side HDMI connection mounting screw from the panel enough to allow the LockIt lacing bracket to be placed over it.
3. Place the LockIt lacing bracket onto the screw and slide it up against the HDMI connector. Tighten the screw to secure the bracket.
4. Loosely place the included tie wrap around the HDMI connector and LockIt lacing bracket.



5. While holding the connector securely against the lacing bracket, tighten the tie wrap, then remove any excess length.

The LockIt bracket can also be used in a stacked formation, as shown below.

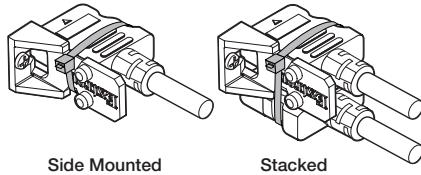


Figure 2. LockIt Bracket Mounting Options

4. **Audio inputs 1-5 (audio models only)** — Connect audio sources to these 5-pole captive screw connectors. Wire the connector for line level, balanced or unbalanced, analog stereo as shown below.

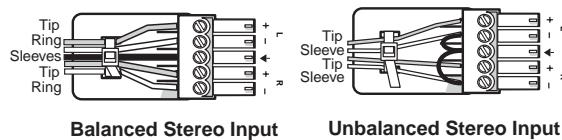


Figure 3. Audio Input Connector Wiring

NOTE: Control signal ground pins are labeled "G". Audio ground pins are as ↓. The wiring and function are the same, whichever way your product is labeled.

5. **HDMI output** — Connect an HDMI display device to this HDMI connector.

NOTE: All video outputs (HDMI, VGA, SDI) share a common output resolution and display the same content.

6. **RGB or HD component (R-Y, Y, B-Y) 15-pin HD video output** — Connect an RGB video display or HD component video display to this HD 15-pin connector.

NOTE: Simultaneous identical scaled outputs for HDMI and analog RGB or HD component video are available.

7. **Optional 3G-SDI/HD-SDI output connector** — Connect an SDI (serial digital interface) display to this female BNC connector for SDI output. This complies with SMPTE 292M and 424M and ITU video digital standards.

NOTE: 3G/HD-SDI output is only active if the current resolution is set to 720p, 1080i, 1080p, or 2k 23.98/24/25 hz.

8. **Genlock connector and loop through (SDI models only)** — Connect an external reference signal for synchronization of the SDI output. The loop through can be used to synchronize additional devices.

⑨ **Audio output (fixed, audio models only)** — Connect audio output devices to this 5-pole, captive screw connector for line level, balanced or unbalanced, analog stereo. Wire the connectors as shown below.

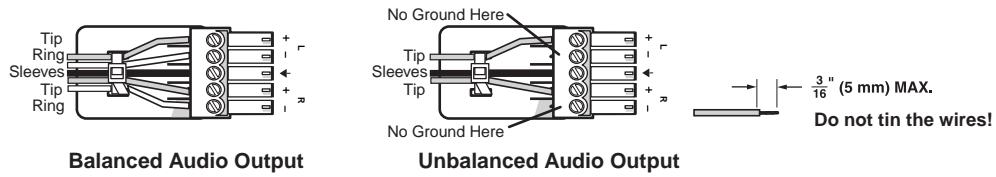


Figure 4. Audio Output Connector Wiring

⑩ **RCA audio output (S/PDIF, fixed, audio models only)** — Plug in an S/PDIF audio output device into this female RCA connector. This connector outputs digital S/PDIF audio formats (2-channel LPCM, Dolby Digital, or DTS).

⑪ **Audio output (variable, audio models only)** — Connect audio output devices to this 5-pole, captive screw connector for line level, balanced or unbalanced, analog stereo. Wire the connectors as shown below.

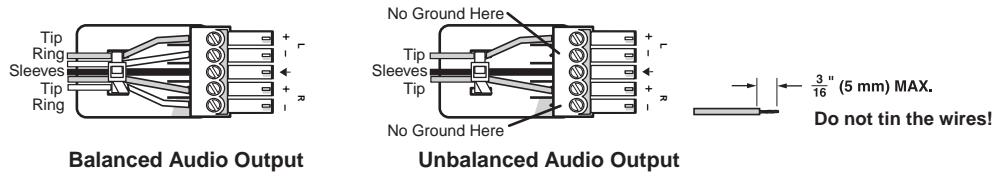


Figure 5. Audio Output Connector Wiring

⑫ **Reset button and LED** — Using an Extron Tweaker, pointed stylus, or ballpoint pen, press this recessed button for manual resets. The unit has four modes of reset (see **“Resetting the Unit”** on page 33 for additional information). The green LED flashes to show the reset mode indications and that power is on.

⑬ **LAN connector** — Plug an RJ-45 jack into this socket to connect the unit to a computer network. Use a patch cable to connect to a switch, hub, or router. Wire the connector as shown below.

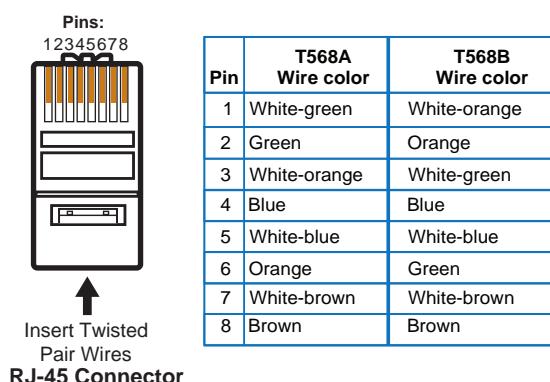
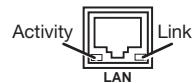


Figure 6. RJ-45 LAN Connector Wiring

LAN Activity LED — A blinking yellow LED indicates LAN activity.



Link LED — The green LED lights to indicate a good LAN connection.

⑯ **RS-232/IR port** — For serial RS-232 control, connect a host computer or control system to the 5-pole captive screw connector. This port is also a hard wired IR control for use with an external IR controller.
The default RS-232 protocol is 9600 baud, 1 stop bit, no parity, 8 data bits, no flow control.
By default the IR port is disabled. When enabled, the IR port accepts 38 kHz to 1 MHz, modulated signals at TTL level (0-5 V)

⑰ **Remote contact closure port** — For remote input selection of any of the five inputs, connect a suitable contact closure control device to this 5-pole captive screw connector. The contact closure port and the RS-232 port share a common ground.

Operation

This section of the manual discusses the operation of a DVS 605 device. Topics covered include:

- [Front Panel Overview](#)
- [Powering Up](#)
- [The DVS 605 Menu System — Configuration and Adjustments](#)
- [Front Panel Lockout \(Executive Modes\)](#)
- [Window vs. Image Size Position — An Overview](#)
- [Picture-in-Picture \(PIP\) Mode](#)
- [Other DVS 605 Operating Features](#)

Front Panel Overview

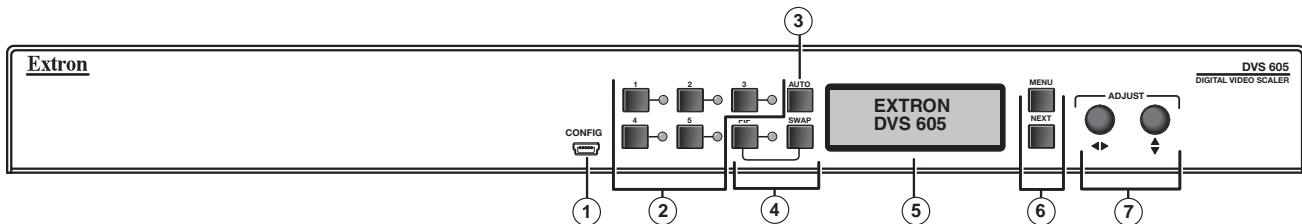


Figure 7. DVS 605 Front Panel Features

- ① **Mini USB configuration port** — Connect a control system or computer to this front panel mini USB port for device configuration, control, and firmware upgrades.
- ② **Input selection buttons and LEDs (1-5) —**
Input LEDs — The LED of the selected input lights when the button is pressed. A blinking LED indicates an audio breakaway input (audio models only).
Inputs 1 and 2 (universal input buttons) — Inputs 1 and 2 select Auto detect, RGB scaled (RGBHV, RGBS, RGsB), Auto-YUV, RGBcVS, S-video, and composite video inputs.
Inputs 3, 4, and 5 (HDMI/DVI buttons) — Inputs 3, 4, and 5 select HDMI/DVI inputs
- ③ **Auto-Image button** — Use this to start an Auto-Image function which automatically sizes and centers an input signal.
- ④ **PIP (Picture-In-Picture) button and Swap image button** — The PIP button enables or disables the PIP mode. The Swap button allows the user to swap the two current inputs displayed in the main and PIP windows.
- ⑤ **LCD display** — Displays configuration menus and status information. See “[The DVS 605 Menu System — Configuration and Adjustments](#)” section on page 13 for details.
- ⑥ **Menu navigation buttons (Menu and Next) —**
Menu — Use this button to enter and move through the main menu system.
Next — Use this button to step through the submenus of the scaler menu system.
See the “[The DVS 605 Menu System — Configuration and Adjustments](#)” section on the next page for details.
- ⑦ **Adjustment knobs (horizontal \blacktriangleleft and vertical \blacktriangledown) —** Using the menu system, rotate either of these two knobs to scroll through the menu and to make any adjustments.

Powering Up

When applying power to the DVS 605, the unit undergoes a start-up self testing sequence (see image below) and then the LCD displays the default display cycle.

Default Display Cycle

When in use but not in any menu mode, the LCD screen defaults to cycling through the input/output configuration currently installed. The displayed content may vary, depending on the input video signal type. See figure 8 for a typical default display cycle.

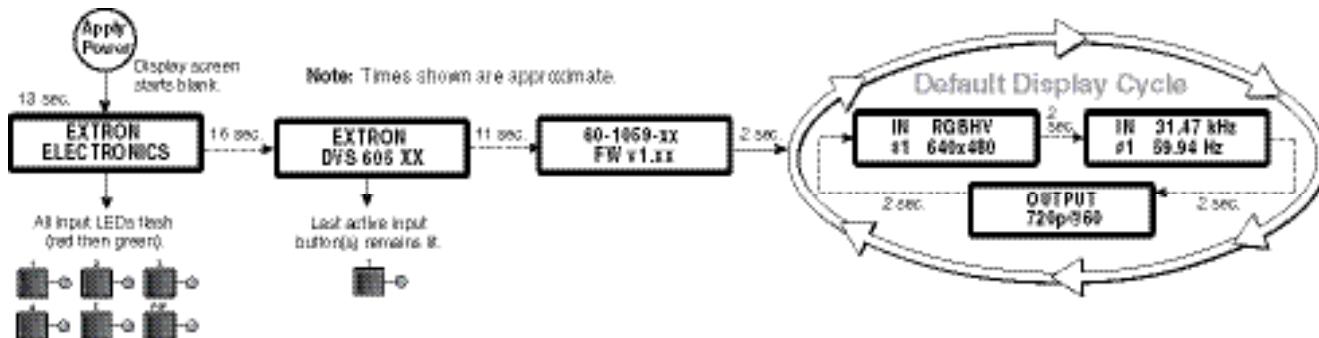


Figure 8. Typical Default Display Cycle

The default display cycle shows the scaler output rate and refresh rates for the currently selected input.

The DVS 605 Menu System – Configuration and Adjustments

Scaler configuration and adjustments can be performed by using the embedded web pages (see “[Using Default Web Pages](#)” starting on page 60), the Extron Simple Instruction Set (SIS) of commands (see “[SIS Communication and Control](#)” starting on page 34), or by using the front panel controls and the menus displayed on the DVS unit’s LCD screen. These menus are used primarily when the scaler is first set up.

Menu Navigation Using Front Panel Controls

Menu button — Press the **Menu** button to activate menus and scroll through the eight main menus.

Next button — Press the **Next** button to move between the submenus of a selected main menu item.

Adjust (↔,↑) knobs — In configuration mode, rotate the Adjust horizontal (↔) knob and Adjust vertical (↑) knob to scroll through submenu options and to make adjustment selections. See the flowcharts in this chapter for explanations on knob adjustments.

Menu Overview

After start-up, and when no adjustments are actively being made, the “default cycle” appears on the LCD. The screens cycle between the screen that shows the number and video format of the active input and the current output resolution.

Pressing the **Menu** button once brings up the first of eight main (top level) menus, as shown below. Each successive press of the **Menu** button goes to the next main menu.

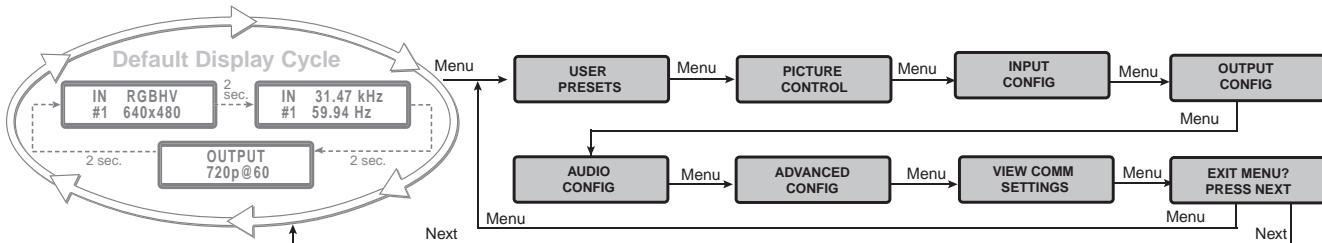


Figure 9. Top Level Menus

A fourth default cycle menu appears only when genlock is enabled. See “[Genlock/AFL Mode](#)” on page 20 for details.

NOTE: From any menu or submenu, after 20 seconds of inactivity the DVS will save all adjustment settings and time-out to the default cycle.

The [flowchart](#) shown on page 15 provides an overview of the complete menu system, with configuration submenus and the options for each setting. In the flow charts the use of “x”, (for example in (x) or lnx) indicates an input number.

Use the **Menu** button to scroll between top level menus and press **Next** to enter the submenus.

NOTE: If no signal is present on the currently selected input, NO SIGNAL appears in place of the input type. For example, INPUT 4 NO SIGNAL.

Details of each of the menus are on subsequent pages after the main flow chart.

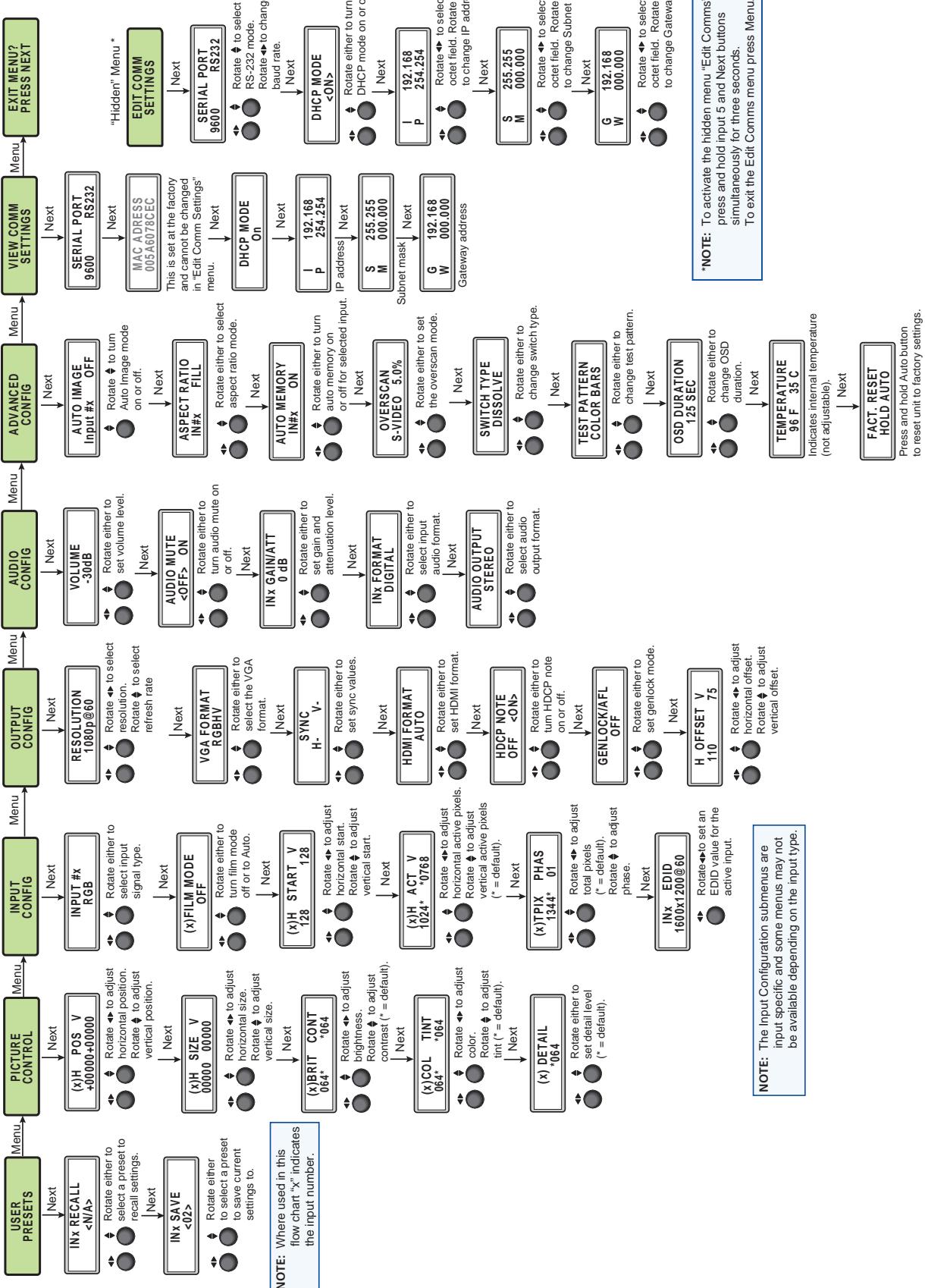


Figure 10. Main Menu

To return to the default cycle from within any menu, press the **Menu** button repeatedly until the Exit menu appears, then press the **Next** button. Alternatively, allow the DVS 605 to time-out (after 20 seconds).

Submenus are accessed from a main menu by pressing the **Next** button. When within a submenu, press the **Menu** button to go out of the submenu and back to the active main menu.

User Presets

This menu allows the user save or recall up to 16 presets for the selected input, shown as INx on the LCD screen.

To use this menu press **Next** to get the relevant submenu, Recall or Save.

When within the submenu use the Adjust knobs to select the preset to save or recall.

Press **Menu** to exit the submenu.

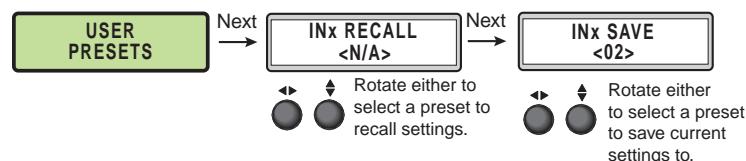


Figure 11. User Preset Menu

Picture Control

This menu allows the user to adjust various picture control settings such as horizontal and vertical window positioning, horizontal and vertical window size, brightness and contrast, color and tint, and detail settings for the selected input. The selected input is shown as (x) on the LCD screen.

To use this menu press **Next** to get the relevant submenu.

When within the submenu use the adjust knobs to select and then adjust the values as desired.

Press **Menu** to exit the submenu.

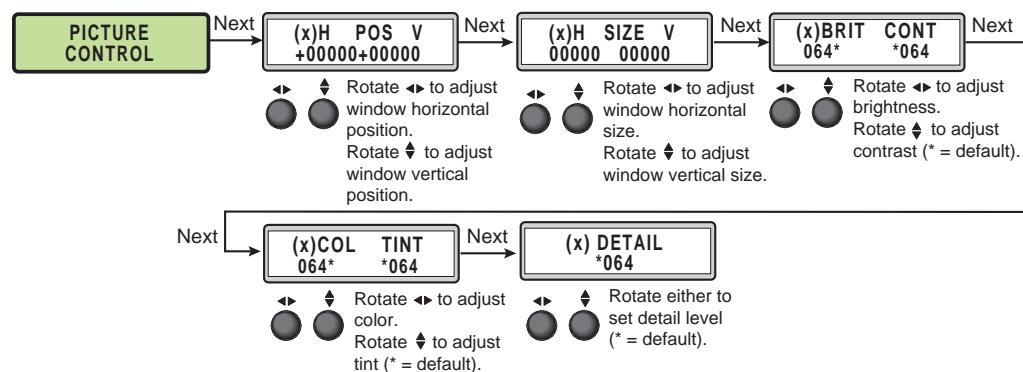


Figure 12. Picture Control Menu

Input Configuration

This menu allows the user to adjust various input configuration settings such as video signal type, film mode, horizontal and vertical start position, horizontal and vertical active pixels, total pixel number, phase, and EDID settings for the selected input. The selected input is shown as (x) on the LCD screen images.

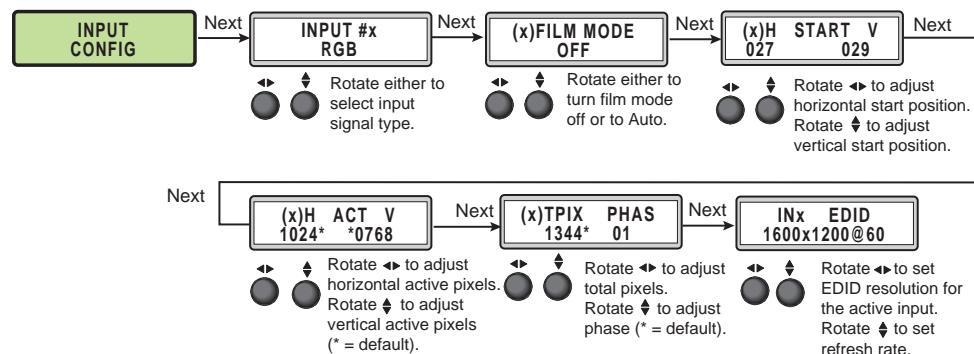


Figure 13. Input Configuration Menu

NOTE: Only inputs 1 and 2 offer selectable video types.

Input video types

Rotate either the Adjust horizontal (↔) or Adjust vertical (↕) knob while in any of the Input submenus to select the appropriate video format.

Input 1

Input 1 is a universal analog input for RGB scaled, Auto YUV, RGBcvS, S-video and composite video.

When input 1 is set to YUV Auto, the scaler detects if YUVi or YUVp/HDTV is applied and sets the input accordingly.

It can also be set to autodetect the incoming input signal type. This is the default setting.

Input 2

Input 2 is a universal analog input for RGB scaled, Auto YUV, RGBcvS, S-video and composite video.

When input 2 is set to YUV Auto, the scaler detects if YUVi or YUVp/HDTV is applied and sets the input accordingly.

It can also be set to autodetect the incoming input signal type. This is the default setting.

Inputs 3-5

Input 3 through 5 are digital inputs for HDMI or DVI input signals.

Output Configuration

The output configuration menu allows selection of output resolution and refresh rates, analog output types (RGBHV, RGBS, RGsB and Y, B-Y, R-Y), sync polarity, HDMI format, HDCP notification display, genlock setting, and offset values.

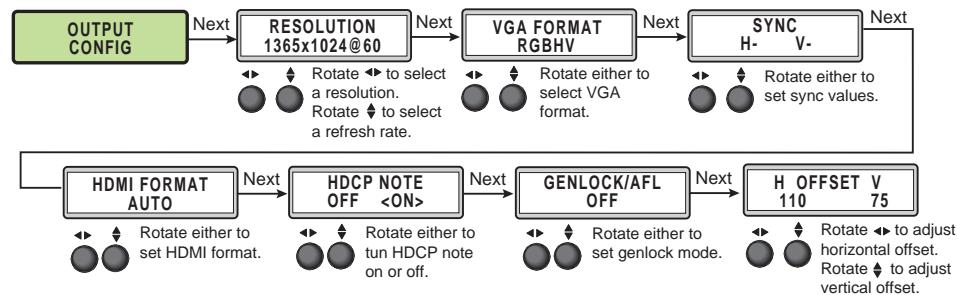


Figure 14. Output Configuration Menu

Resolutions and Refresh Rates

Rotate the horizontal (**↔**) knob to select a resolution, and the vertical (**↓**) knob for refresh rates. The default resolution and rate is 720p/60 Hz.

There are also 5 custom, user-defined/captured rates available (C1 - C5). When no rate is captured or uploaded to any of the 5 custom memory slots, they default to 720p/60 Hz.

Resolution	23.98 Hz	24 Hz	25 Hz	29.97 Hz	30 Hz	50 Hz	59.94 Hz	60 Hz	75 Hz
Custom 1 through 5 For captured or uploaded EDID tables									
640 x 480						X		X	X
800 x 600						X		X	X
852 x 480						X		X	X
1024 x 768						X		X	X
1024 x 852						X		X	X
1024 x 1024						X		X	X
1280 x 768						X		X	X
1280 x 800						X		X	X
1280 x 1024						X		X	X
1360 x 765						X		X	X
1360 x 768						X		X	X
1365 x 768						X		X	X
1366 x 768						X		X	X
1365 x 1024						X		X	X
1440 x 900						X		X	X
1400 x 1050						X		X	
1600 x 900						X		X	
1680 x 1050						X		X	
1600 x 1200						X		X	
1920x1200						X		X	
480p								X	X
576p								X	
720p			X	X	X	X	X	X	
1080i						X	X	X	
1080p	X	X	X	X	X	X	X	X	
2k	X	X	X	X	X	X	X	X	

When a new custom rate has been captured or uploaded, the on-screen display (OSD) dynamically updates with the new rate for that custom slot. For example if a custom 480p EDID is uploaded to slot C1, the LCD would read “C1: 720x480”. These five custom slots are shared between custom output resolutions (based on preferred timings 1 block) and custom EDID tables, which can be assigned to any DVS input.

Analog Output Format

Using either of the Adjust knobs (↔), select the output video format required by the display: RGBHV (default), RGBS, RGsB, YUV bi-level, and YUV tri-level.

Sync Polarity

Some display devices may require a particular combination of horizontal (H) and vertical (V) sync signal polarities. Select the appropriate combination of positive or negative H and V sync by rotating either the Adjust horizontal (↔) or the Adjust vertical (↑) knob.

NOTE: If the output format was specified as RGsB or YUV, or RGBS, this submenu will not be displayed because this menu is only applicable for RGBHV.

HDMI Format

Using either of the Adjust knobs (↔), select the HDMI format as follows:

- Auto — (based on sink EDID), default
- DVI RGB 444
- HDMI RGB 444 FULL (0-255, audio, InfoFrames)
- HDMI YUV 444 FULL (0-255, audio, InfoFrames)
- HDMI YUV 444 LIMT (16-235, audio, InfoFrames)
- HDMI YUV 422 FULL (0-255, audio, InfoFrames)
- HDMI YUV 422 LIMT (16-235, audio, InfoFrames)

HDCP Notification

The HDCP Notification provides a means of determining if HDCP content restrictions are preventing a video signal from passing. The DVS 605 has the ability to notify the user that they are currently trying to view HDCP protected content through a non-HDCP compliant output port (15-pin HD or 3G/HD-SDI) or a non-HDCP compliant HDMI/DVI display. The options presented to the user during this scenario are the ability to show a green screen with a moving “**OSD bug**” (see page 32) reading “HDCP CONTENT,” or to disable this message, and instead output muted (black) video on non-HDCP compliant displays.

The HDCP Notification setting can be adjusted via the front panel menu by using either of the Adjust knobs (↔), to turn HDCP notification on or off.

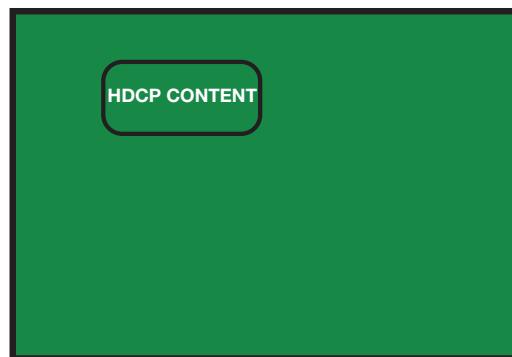


Figure 15. Green HDCP Notification Screen

It can also be adjusted via the internal web pages or SIS commands.

HDCP Status: Inputs & Outputs

Through a series of SIS commands (see “[SIS Communication and Control](#)” starting on page 34) the DVS 605 has the ability to report HDCP status of the HDMI input signals as well as connected HDMI sink devices. When the unit is queried, it reports feedback on the specified input (source) or output (sink) as follows:

- There is no sink or source attached.
- The connected sink supports HDCP, or the connected source is currently providing a HDCP encrypted signal.
- The connected sink does not support HDCP, or the connected source is currently providing an unencrypted signal.

HDCP status of the current input can be viewed on the OSD bug. If the input is encrypted the OSD bug displays an HDCP padlock symbol. The HDCP status of the currently selected input, and the capabilities of the connected HDMI sink device, can also be viewed on the AV Controls bar within the internal web pages of the unit.

HDCP Authorized

The HDCP Authorized function allows the DVS 605 HDMI inputs to be able to report as an HDCP authorized sink or a non-HDCP authorized sink device to a source. This is especially useful for sources that will encrypt their output even if the source material does not require HDCP encryption, which would then prevent content from being displayed on non-HDCP compliant displays.

For example, if the user wanted to show a non-HDCP protected presentation from a PC using the HDMI output of the PC, there is a chance that the PC will encrypt the HDMI, because it can see that the DVS 605 HDMI input supports HDCP authorization. If the user were only going to use the HDMI output of the DVS 605 to a display (sink) that supported HDCP, there would be no issue; however, if the user wanted to use the DVS 605 analog 15-pin HD output to an analog sink (display), the green HDCP notification screen would be displayed, due to the source unnecessarily enabling encryption on its HDMI output.

By disabling HDCP authorization on one of the DVS 605 HDMI inputs, the PC with non-HDCP protected content will determine that the signal path does not support HDCP, and therefore will not encrypt its output. With HDCP authorization disabled on the DVS 605’s input, the user will be able to view their non-HDCP protected content from any video output of the DVS 605. With HDCP authorized disabled on an input, if HDCP protected content is selected on the source, the source will either simply mute its video output to black, or display a warning message to the user.

Genlock/AFL Modes

The DVS 605 has the ability to lock the output vertical refresh rate to the selected input signal vertical refresh rate (AFL), or to an applied SDI Genlock signal (SDI models only).

The 3 available modes for genlock are:

- **Off** — A free running pixel clock is generated internally by the DVS 605.
- **Input AFL** — This mode locks the output vertical refresh rate to the vertical refresh rate of the currently selected input using Extron Accu-Rate Frame Lock technology to ensure no frames of the input are repeated or dropped due to frame rate conversion. This mode will result in glitches / interruptions in output sync when a new DVS 605 input is selected, or when a new signal has been routed to the DVS 605 selected input, as the DVS 605 locks to the vertical refresh rate of the new input. If no input signal is detected, or if locking to the input signal would result in a >165 MHz pixel clock, a free running pixel clock is generated by the DVS 605.

- **SDI Genlock (SDI models only)** — This locks the output vertical refresh rate to the applied analog genlock input on the SDI models. In the SDI Genlock mode, the output resolution and refresh rate of the DVS 605 must be set to **exactly** match the applied analog genlock signal to ensure a true genlock to the applied SDI Genlock signal. If the applied SDI Genlock signal does not exactly match the resolution and refresh rate of the DVS 605 output resolution, the DVS 605 will lock its output vertical refresh to that of the applied SDI reference (frame lock), which may result in more jitter. If no SDI Genlock signal is detected, or if the detected SDI Genlock signal would result in a >165 MHz pixel clock, a free running pixel clock is generated by the DVS 605. If either Genlock/AFL mode has been enabled, a conditional “Genlock/AFL Locked” “Genlock/AFL Not Locked” LCD menu will be added to the DVS 605 default menu cycle to indicate the current Genlock/AFL status. The Genlock/AFL status can also be queried via SIS command.

When using the SDI genlock, the output rate of the DVS 605 **must** be set to match the applied SDI genlock reference signal, for example 1080i at 59.94 Hz

NOTE: When the DVS 605 is set for input signal lock, a glitch in output sync may be experienced when switching between inputs as the scaler locks to the input reference.

If either genlock mode is enabled, but no genlock or reference input signal is being applied to the scaler, the DVS 605 defaults to an internally generated vertical refresh rate that matches the current output resolution setting.

Genlock/AFL can be enabled via the front panel menu system by using either of the Adjust knobs ($\blacktriangleleft \blacktriangleright \blacktriangleup \blacktriangledown$), to turn Genlock/AFL off, set to Input AFL signal, or set to SDI Genlock (where applicable).

When genlock/AFL is enabled a fourth default cycle menu appears.

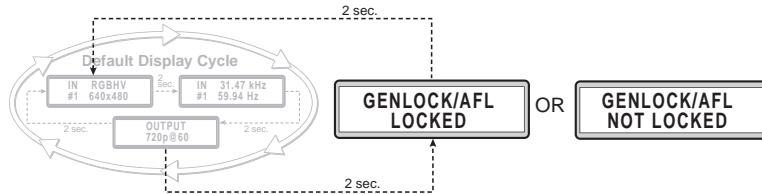


Figure 16. Fourth Default Display Item — Genlock/AFL Menu

This menu is only visible when genlock is enabled.

Genlock/AFL Offset Description

When used in a genlocked system, the DVS 605 can be adjusted +/- one frame of video on a per pixel basis, for perfect genlock alignment with the remainder of the system. This offset adjustment can help compensate for long cable runs, or delays generated by upstream equipment. The adjustment can be made using SIS commands, or found in the Output Config Menu, and is only available on -D or -AD models with SDI GENLOCK enabled, and locked to a reference signal.

NOTE: Adjustment of the genlock offset may result in a brief loss of genlock as the DVS 605 applies the desired pixel/line offset with regard to the applied genlock reference.

Audio Configuration (All Models)

Audio Configuration allows the user to set volume level (0 dB to -100 dB range), turn audio mute on or off, adjust input gain and attenuation levels (-53 dB to +9 dB range) for the current analog input. It also allows selection of an input audio format (none, analog, 2-channel digital, full digital, 2-channel auto, or full auto), and the audio output type (stereo or dual mono), which can be adjusted for each input.

NOTE: Volume level and input gain and attenuation adjustments are only available on audio models (DVS 605 A and DVS 605 AD).

- For analog inputs 1 and 2, the choice of input audio format is analog or none.
- For non-audio models format selection for inputs 3 through 5 is limited to none, 2-channel digital, or full digital.
- For inputs 3, 4, and 5, when in auto mode, digital audio is used when present. If no digital audio is present it defaults to analog audio.

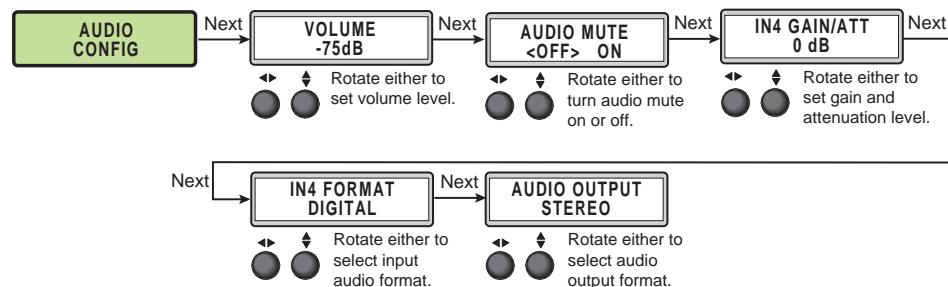


Figure 17. Audio Configuration Menu

Use the Next button to scroll to the applicable submenu, and user both Adjust knobs (\blacktriangleleft \blacktriangleright) to change the settings as needed.

Input Audio Format	Description
None	All audio for the input is muted: 128 byte EDID (VGA/DVI) is presented to the source.
Analog	5-pole captive screw connector is used for audio input: 128 byte EDID (VGA/DVI) is presented to the source.
2-channel digital	256 byte EDID (HDMI) is presented to the source requesting 2CH PCM audio.
Full digital	256 byte EDID (HDMI) is presented to the source allowing for all digital audio formats.
NOTE: DVS 605 analog audio outputs are active only if analog or PCM audio is detected on HDMI inputs 3,4, and 5.	
2-channel auto	256 byte EDID (HDMI) is presented to the source requesting 2CH PCM audio. If digital audio is not present this automatically defaults to the 5-pole captive screw analog audio input.
Full auto	256 byte EDID (HDMI) is presented to the source allowing for all digital audio formats. If digital audio is not present this automatically defaults to the 5-pole captive screw analog audio input.

Audio Delay Setting

The DVS automatically delays all analog and digital audio inputs to compensate for internal video processing delay. Occasionally additional audio delay is required to account for other signal processors, scalers, or display devices in a system. For these situations, the DVS 605 offers an additional 0-255 ms static global audio delay which can be set via SIS command or internal web pages to eliminate audio “lip sync” issues.

Advanced Configuration

The following flowchart provides an overview of the Advanced Configuration submenu. The options are Auto-Image (on or off), aspect ratio (fill or follow), auto memory (on or off), overscan (none, 2.5%, and 5.0%), switch type (dissolve or cut), test patterns (see table on page 25), OSD duration, temperature (device reading only) and factory reset.

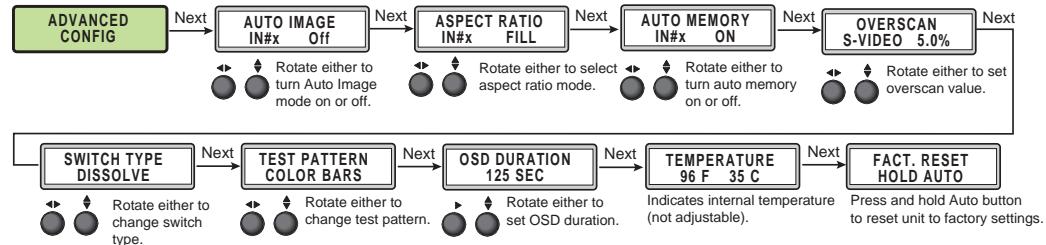


Figure 18. Advanced Configuration Menu

Aspect Ratio

Use either Adjust knob (\blacktriangleleft \blacktriangleright) to set the aspect ratio to Fill or Follow.

The aspect ratio setting is per input, and allows the user to select between each input signal filling the entire output raster (Fill - default setting), or for each input rate to be displayed with its native aspect ratio (Follow - 4:3, 5:4, 15:9, 16:9, 16:10) with the correct letter box or pillar box settings visible under the Image Size and Image Position Picture Controls.

When in the Fill mode, if an aspect ratio adjustment for a single input rate is desired, the correct size and center can be set up using Image Size and Image Position under Picture Controls, using one of the aspect ratio test patterns for a template. If auto memory is enabled, then these settings are saved and recalled the next time the signal is detected.

The DVS 605 clears the previous size and position settings whenever the aspect ratio setting for an input is adjusted.

NOTE: Unique SIS commands can set the device to Auto-Image and Fill or Auto-Image and Follow, regardless of the current aspect ratio.

Auto-Image

Use either Adjust knob ($\blacktriangleleft \triangleright$) to turn Auto-Image on or off (default).

When enabled and a new input frequency is detected, the DVS first applies an existing Auto Memory for the signal (if Auto Memory is enabled), or, if no entry exists, performs an automatic Auto-Image on the new signal. This automatically attempts to size/position the image to fill the screen, with respect to the current aspect ratio setting.

With Auto-Image disabled, the DVS 605 will apply default values to a new input if no Auto Memory exists (if Auto Memory is enabled).

Auto-Image threshold settings

By default, the Auto-Image function considers any analog video with a >25% brightness to be active video. Some video sources, such as dark PC backgrounds, or dark borders around a presentation, may require a lower “Auto-Image threshold,” to ensure incoming video is properly sized and centered by the Auto-Image function. Other scenarios, such as upstream analog twisted pair extension products, may require a greater Auto-Image Threshold setting in order to allow the DVS 605 to ignore extraneous sync pulses that may have been embedded in the RGB signals.

A global analog video Auto-Image threshold value can be set via an SIS command or using internal web pages.

The range is 0% (black / ~0.0 VDC) to 100% (white / ~0.7 VDC), with a default value of 25%.

NOTE: The Auto-Image threshold setting only affects *analog* input signals, and has no effect on digital inputs, which are sized and centered automatically.

Auto Memory

Use either Adjust knob ($\blacktriangleleft \triangleright$) to turn Auto Memory on (default) or off.

The DVS 605 stores 32 auto memories per input, with input configuration and picture control data for each input. The default settings enable these memories to automatically recall input and picture controls for signals that have been previously applied. When auto memories are disabled, the DVS treats every newly applied input as a new source. Default for Auto Memory is on.

How Auto Memory and Auto-Image Interact		
Auto Memory	Auto-Image	Information
On	On	“New” signals/rates that have not been previously detected by the DVS are initially set up using default parameters, then Auto-Image is automatically applied and values stored. The next time that signal is detected, the values stored in the auto memory location are applied.
On (Default)	Off (Default)	“New” signals/rates that have not been previously detected by the DVS are set up using default parameters. If manual input and/or picture settings are made to the input, an auto memory location is created and recalled each successive time the input is detected.
Off	On	Each change in input sync, input switch, or power cycle triggers an automatic Auto-Image. When auto memory is disabled, each change in sync is treated as a new signal and an automatic Auto-Image is triggered. Any manual changes made to the image and picture controls are lost each time a new rate is detected.
Off	Off	Each change in input sync causes default values to be applied to the rate. Any manual changes made to the image and picture controls are lost when a new rate is applied.

Figure 19. Auto Memory and Auto-Image Details

Overscan

Use the horizontal Adjust knob (\blacktriangleright) to select input video type (RGB, YUV, RGBcvS, S-video, composite, or HDMI), and the vertical Adjust knob (\blacktriangledown) to select the overscan mode (None, 2.5% or 5.0%).

Overscan is specific to each input signal type. This zooms and crops SMPTE inputs to mask edge effects and ancillary data that are common in broadcast signals. Issuing an Auto-Image with overscan enabled, runs an Auto Phase routine (YUV and RGB only) and centers and sizes the input according to table values.

NOTE: Overscan is valid only on SMPTE input rates (NTSC, PAL, 480p, 576p, 720p, 1080i, or 1080p).

Switch type

This enables a video switch transition (cut or dissolve) when switching between inputs.

Use either of the Adjust knobs (\blacktriangleright \blacktriangledown) to select the switch type as desired.

NOTE: Input switches between input 4 and input 5 use a fade through black transition.

Test pattern

The built-in test patterns are useful for calibrating a display to the DVS 605 output. Choose a test pattern such as crop, alternating pixels, and color bars to adjust the image.

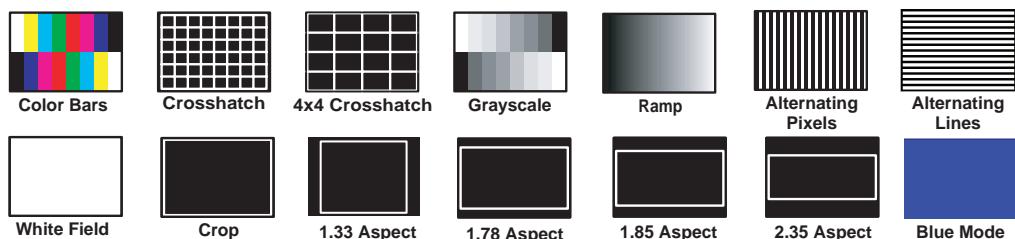


Figure 20. Test Pattern Choices

- **Alternating Pixels** — Used to calibrate input sampling of the display devices to the device output. Use this pattern to adjust the clocking and phasing at the display until no more vertical bands are visible.
- **Crop** — Used to center the output on the display device: adjust H and V to center the display until all four crop lines are visible.
- **Color Bars** — Used to calibrate color settings on the display and to confirm proper system wiring.
- **Blue Mode** — This assists the user in setting up the color and tint levels

Use either the Adjust horizontal (\blacktriangleright) or Adjust vertical (\blacktriangledown) knob to select a test pattern. The default state is Off.

OSD duration

The DVS 605 displays a small OSD “bug” in the upper left corner when switching between input. This bug contains information regarding the detected input rate and format, the HDCP status of the selected input, and an indication of Main vs. PIP inputs. The duration that the OSD bug is on-screen (in seconds) can be set from 1 to 500 seconds via the front panel menu. It can also be set to “No OSD” or Always On”.

The duration can also be set via the internal web pages, or by SIS commands.

Temperature

This is a read-only menu that gives the internal temperature (degrees C and F) of the connected device. No adjustments can be made.

Factory Reset

This menu allows the user to reset the device to the factory default settings.

Press and hold the Auto-Image button until the display changes. Release and press Auto-Image again to confirm that a reset is desired. The device will be reset.

View Comm Settings

The current RS-232 and IP settings are read-only with this menu. To make any setting adjustments, the “hidden” Edit Comm Settings menu must be accessed (see below).

Press Next to go through each sublevel to view the following: serial port (baud rate and communication type), MAC address (cannot be changed), DHCP status (on or off), IP address, subnet mask, and gateway address.

NOTE: To enter the “hidden” Edit Comms Settings menu, press and hold in the input 5 and Next buttons simultaneously. The Edit Comms Settings menu appears.

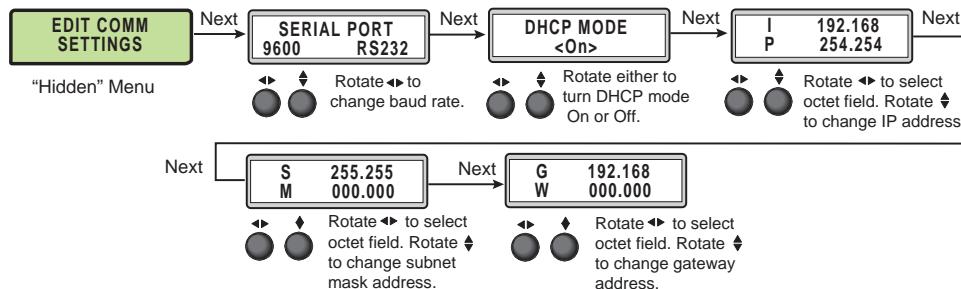


Figure 21. Edit Comm Settings Menu

Exit Menu

From this submenu, press the Menu button to return to the User Presets menu cycle, or press the Next button to exit the menu and return to the default cycle.

Front Panel Lockout (Executive Modes)

To prevent accidental changes to settings, press the Menu and Next buttons simultaneously for 2 seconds to enable front panel lockout mode (executive mode 2).

The menu system returns to the default menu within 10 seconds.

Executive mode 2 locks all front panel functions except input switching, PIP enable and PIP swap, and Auto-Image. Menu and Next buttons and the Adjust knobs are disabled.

When executive mode 2 is active, all functions and adjustments can still be made through USB, RS-232, or Ethernet control. For details on remote control, see “[SIS Communications and Control](#)” starting on page 34.

To disable executive mode 2, press the **Menu** and **Next** buttons simultaneously for 2 seconds. See the flowchart below.

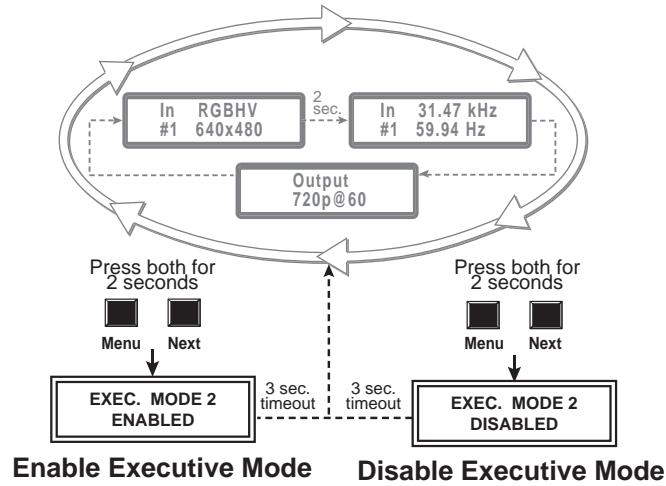


Figure 22. Front Panel Lockout

Executive mode 1 locks all front panel functions completely. This mode can be enabled or disabled by SIS commands only.

Window vs. Image Size Position – An Overview

The DVS 605 provides users the ability to adjust a window size/position and the image's (the content) size/position independently with regards to the output raster. This independent control is available for both the Main and PIP windows allowing the user comprehensive flexibility in output configurations.

The first example below demonstrates how a single sliver of an input (such as a stock ticker or RSS Feed) can be displayed, while the remainder of the input is masked, by setting the image size greater than the window size.

The second example demonstrates the flexibility of PIP mode. The Main window on the left has the image size set to 4 x the window size, which effectively zooms into the top right corner of the input, while masking the remainder of the input. The PIP window on the right demonstrates the automatic aspect ratio compensation of the "Follow" mode, where the image size and center are automatically adjusted to allow for the input to be shown at its native aspect ratio

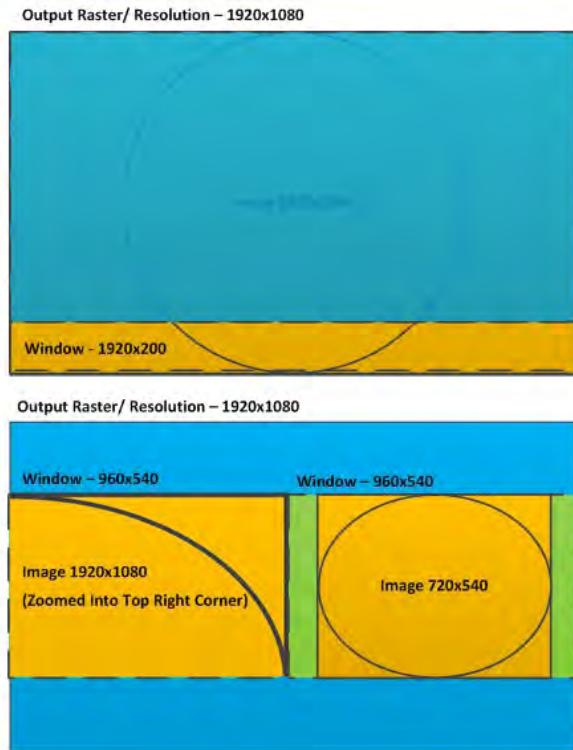


Figure 23. Examples of Window vs Image Size Position

NOTE: In PIP mode, the Fill and Follow calculations take place at each input switch, power cycle, or whenever a new input signal is routed to the current input. The Fill / Follow calculations will adjust the image size and position in order to maintain the input's native aspect ratio with regard to the current window size.

Picture-in-picture (PIP) Mode

The DVS 605 can display two images on the screen simultaneously.

The PIP window can be activated using front panel PIP button, discrete SIS commands, PIP presets, or the device embedded web pages. See “[SIS Communication and Control](#)” starting on page 34, or “[Using the Default Web Pages](#)” starting on page 61 for details.

NOTE: Input 5 is not available for PIP mode.

Front Panel Activation

When the PIP window is enabled,

- the front panel PIP LED lights red.
- the PIP input LED lights red.
- the input LED for the main window lights green.

NOTES:

- Inputs 1 through 4 can be used in any combination for PIP mode.
- Input 5 is not selectable for PIP operation.
- Attempting to activate PIP mode while input 5 is selected results in the input 5 LED blinking red/green for one second — LCD reads “IN5 PIP NOT AVAILABLE”.
- Attempting to select input 5 for the PIP input while PIP mode is active results in the input 5 LED flashing red/off for one second — LCD reads “IN5 PIP NOT AVAILABLE”.
- When in PIP mode, audio breakaway is not supported. Audio follows either the main window or the PIP window, and is selectable via SIS command.

To start picture-in-picture mode:

1. Select an input for the main window input signal. The LED lights green.
2. Press the PIP button. The LED lights red, and the LED for input 1 or input 2 lights red.
3. Select another input as the PIP input, as desired. The corresponding LED lights red.

While the PIP mode is active, all front panel input selection, input configuration, and picture control adjustments will affect the PIP window only.

When PIP is activated from the front panel, or via SIS command (not using PIP presets), the DVS will automatically set up the last PIP layout with sizing and centering for the main window, main image, PIP window, and PIP image. On a new unit, or after a reset, the DVS defaults to the layout saved in PIP Preset #1

The inputs in the windows can be swapped using the front panel Swap button or a single SIS command. See “[SIS Communication and Control](#)” for command details.

To swap between PIP and main inputs:

Press the Swap button. The input for the main window now becomes the new PIP input and the LED changes from green to red. The previous PIP input becomes the new main window input and the LED changes from red to green.

When PIP mode is not active, the Swap button swaps the current main input with the previously selected main input.

PIP Presets

A PIP preset contains settings for the size and position of PIP window and which main and PIP inputs that were active when the preset was saved. PIP presets are used to quickly recall a group of settings that relate to the main and PIP windows and content settings. Sixteen global PIP presets are available for the DVS 605.

A set of 10 factory default layouts exist and can be overwritten by saving new presets. PIP presets can only be restored to factory defaults and not deleted.

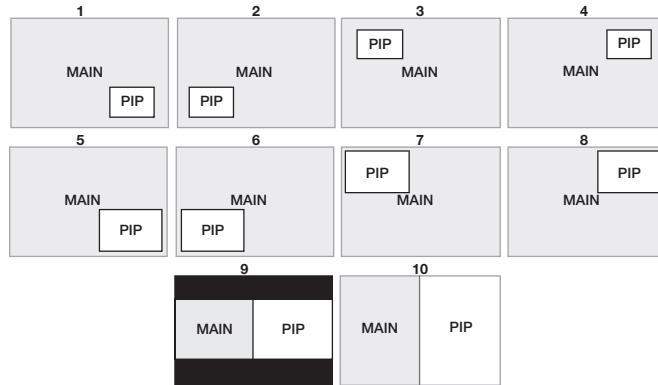


Figure 24. Default Main and PIP Window Layouts

A PIP preset can be created and saved using SIS commands or the embedded web pages. See “[SIS Communication and Control](#)” starting on page 34, or “[Using the Default Web Pages](#)” starting on page 61 for details.

PIP presets save the main and PIP inputs that were active when the preset was saved.

PIP presets can be recalled with or without inputs.

Presets				
Setting	Input Presets	User Presets	PIP Presets	Auto Memory
Horizontal/Vertical Start	Yes			Yes
Active Pixels	Yes			Yes
Active Lines	Yes			Yes
Total Pixels	Yes			Yes
Phase	Yes			Yes
Brightness and Contrast	Yes	Yes		Yes
Color and Tint	Yes	Yes		Yes
Detail	Yes	Yes		Yes
Input Type	Yes			
Audio Gain and Attenuation	Yes			
Main Window Size and Position	Yes	Yes		
PIP Window Size and Position			Yes	
Preset Name	Yes	Yes	Yes	
Main Input			Yes	
PIP input			Yes	
Film Mode	Yes			
Presets Available	128 global	32 per input channel	16 per input channel	16 global
Recall Location	Any input that can support the input type saved in the preset	Automatically recalled based on incoming signal	Current input	Any input except input 5

Other DVS 605 Operating Features

Screen Save

Screen Save mode allows the user to configure what will be displayed on the video output, and for what duration, when the selected DVS 605 input loses an active video signal. By default, the DVS 605 will continue to output muted (black) video and sync indefinitely. Alternatively, users have the ability to display a blue screen with a moving text “bug” that indicates that there is no active signal on the selected DVS 605 input.

A screen save duration can also be configured, which allows the user to set a duration that the black or blue output video will be displayed, before output sync is disabled. By disabling the output video sync, connected display devices can enter a low-power, or standby state to save lamp/panel life. The default duration is for output sync to never timeout, but it can be configured to disable sync 0-500 seconds after detecting no active video input. Screen Save mode can be configured via the internal web pages (see “[Screen Saver Settings](#)” section on page 81), or by SIS command (see “[Screen saver mode](#)” commands, on page 48).

Power Save

The power save mode allows the user the ability to put the DVS 605 into a low power state, via SIS command (see “[Power Save Mode](#)” on page 47), or the internal web pages (see [Executive/Power Mode Page](#) on page 86). This state effectively cuts the power consumption of the DVS 605 in half. While in this mode, no audio or video input processing takes place, and all audio and video outputs are disabled. While in Power Save mode, all front panel LEDs and LCD backlight are disabled, and the LCD will read “STANDBY MODE.” The user has the ability to exit Power Save mode via front panel button press, SIS command, or internal web pages. The Power Save state is entered instantly after the associated command has been received, but 5-10 seconds are required to resume from the Power Save state.

Custom EDID/Custom Output Resolution

The user has the ability to capture EDID or import/upload EDID files to make custom EDID available for emulation on inputs, or for the generation of custom output resolutions. The user can import a 128 or 256 byte EDID “.bin” file from a PC, or can capture the EDID from an attached sink (display) device. This EDID can then be saved and stored in one of five custom EDID slots, which are then available for custom EDID emulation, or custom output rate generation (custom rate based on the EDID preferred timings 1). These functions are available via SIS (see “[Input EDID](#)” on page 42), or the internal web pages.

NOTE: Custom EDIDs do not have the audio blocks edited by the audio format setting.

Typically the audio capabilities presented in an HDMI input’s EDID are automatically determined by the current audio format setting for the input. For example, when None or Analog audio are set, the CEA extension block is omitted from the HDMI input EDID, to ensure a source device provides audio on its analog outputs. In the 2Ch Digital and 2CH Auto modes, a CEA EDID extension is emulated that contains support for only 2Ch LPCM digital audio formats. In the Full Digital and Full Auto modes, a CEA EDID extension is emulated that allows for all possible digital audio formats.

However, if a custom uploaded, or captured EDID is used for EDID emulation, the current audio input setting of the HDMI input has no effect on the described audio capabilities contained within the custom EDID file. The DVS 605 simply presents the custom EDID file without any modifications. The Audio Format setting continues to determine which audio source is used for the HDMI input (none, analog audio, or embedded digital audio).

Audio Format	Audio Source	Analog Input	Digital Inputs	EDID
None	Muted	Yes	Yes	No CEA
Analog	5-Pole Captive	Yes	Yes	No CEA
LPCM-2Ch	Embedded Digital	No	Yes	LPCM-2Ch CEA
Multi-Ch	Embedded Digital	No	Yes	Multi-Ch CEA
LPCM-2Ch Auto	Embedded Digital (when present), else 5-Pole Captive	No	Yes	LPCM-2Ch CEA
Multi-Ch Auto	Embedded Digital (when present), else 5-Pole Captive	No	Yes	Multi-Ch CEA

NOTE: If one of the custom EDID slots is in use, the audio format setting will have no effect on the emulated EDID table.

It is important that care should be taken when assigning custom EDID files, as the user can potentially assign an analog (VGA) EDID to a digital (HDMI) input, or vice versa. If an EDID file listing support for the incorrect video format has been assigned, the attached source may not output any video, or unexpected behavior may result.

The OSD Bug

When switching between inputs, the DVS 605 will display a small OSD “bug” in the upper left corner. This bug contains information regarding the detected input rate and format, the HDCP status of the selected input, and an indication of Main vs. PIP inputs. The OSD bug can be disabled by setting the OSD duration to 0.0 seconds via the front panel, the internal web pages, or by SIS commands.

The items displayed are:

- Main vs. PIP
- Detected input rate
- HDCP Lock



Hardwired IR Port

The DVS 605 includes a hardwired IR input, to be used with a hardwired IR output from an Extron MLC, IPL, or similar controller. This port allows for simple, unidirectional control of the DVS 605 from a host controller that has no available RS-232 ports, but does have available hardwired IR outputs.

Using the DVS 605 IR driver, available from the Extron website, basic controls include:

- Input Switching
- Auto-Image, Auto-Image + Fill, Auto-Image + Follow
- Audio Mute, Video Mute, A/V Mute
- Volume
- PIP On/Off, PIP Swap
- User Presets Recall 1, 2, and 3 (for the selected input)
- PIP Preset Recall 1 – 6 (with or without input)
- Show Informational On Screen Display (OSD)

NOTE: There is no available IR remote for the DVS 605.

Resetting the Unit

There are three unit reset modes (numbered 1, 4, and 5). These are available by pressing the recessed Reset button on the rear panel with a pointed stylus, pen, or similar item to access it. See the following table for a summary of the reset modes.

ATTENTION: Review the reset modes carefully. Using the wrong reset mode may result in unintended loss of flash memory programming, port reassignment, or processor reboot.

NOTE: The reset modes listed closes all open IP and Telnet connections and all sockets. Each mode is a separate function, and not a continuation from mode 1 to mode 5.

DVS 605 Reset Mode Summary				
	Mode	Activation	Result	Purpose and Notes
Use Factory Firmware	1	Hold down the recessed Reset button while applying power to the unit.	<p>The unit reverts to the factory default firmware:</p> <p>a) Reverts to the factory default firmware for a single power cycle.</p> <p>b) All user files and settings (drivers, audio and video adjustments, IP settings, etc.) are maintained.</p> <p>NOTE: After a mode 1 reset is performed, update the firmware of the unit to the latest version. Do not operate the device firmware version that results from the mode 1 reset. This temporarily resets the unit to factory default until power is recycled. If you want to use the factory default firmware, you must upload that version again.</p> <p>NOTE: If you do not want to update firmware, or you performed a mode 1 reset by mistake, cycle power to the unit to return to the firmware version that was running prior to the mode 1 reset. Use the OQ SIS command to confirm that the factory default firmware is no longer running (look for asterisks following the version number).</p>	Use mode 1 to revert to the factory default version if incompatibility issues arise with user-loaded firmware.
Reset All IP Settings	4	Hold down the Reset button for about 6 seconds until the LED blinks twice (once at 3 seconds, once at 6 seconds). Then, release and press Reset momentarily (for <1 second) within 1 second*.	<p>a) Sets port mapping back to factory default</p> <p>b) Turns DHCP off - sets IP to default address (192.168.254.254)</p> <p>c) Reset LED flashes four times in quick succession during reset.</p>	Mode 4 resets all IP settings back to factory defaults.
Reset to Factory Defaults	5	Hold down the Reset button for about 9 seconds until the LED blinks three times (once at 3 seconds, once at 6 seconds, once at 9 seconds). Then, release and press Reset momentarily (for <1 second) within 1 second*.	<p>Mode 5 performs a complete reset to factory defaults except the firmware.</p> <p>a) Does everything mode 4 does.</p> <p>b) Resets all user modifiable configuration to default values including IP settings and real-time adjustments.</p> <p>c) Deletes all user loaded files.</p> <p>d) The Reset LED flashes 4 times in quick succession during the reset.</p>	Mode 5 is useful if you want to restart with default configuration. Equivalent to SIS command ZQQQ.
<p>NOTE: *For modes 4 and 5, nothing happens if the momentary press does not occur within 1 second</p>				

Figure 25. Reset Mode Comparison

SIS Communication and Control

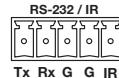
The DVS 605 can be configured and controlled via a host computer or other device (such as a control system) attached to the rear panel RS-232 connector or the LAN port or the front panel USB port. Control is made using the Extron Simple Instruction Set (SIS) of commands, or the DVS default web pages.

Commands can be entered using a Telnet application such as the Extron DataViewer, available at www.extron.com. See the DataViewer Help file for use.

This section describes SIS communication and control. Topics that are covered include:

- [Host to Scaler Communications](#)
- [Commands and Responses](#)

The scaler uses a protocol of 9600 baud, 1 stop bit, no parity, and no flow control and the rear panel RS-232 captive screw connector has the pin assignments as shown.



Host to Scaler Communications

SIS commands consist of one or more characters per field. No special characters are required to begin or end a command sequence. When the DVS 605 determines that a command is valid, it executes the command and sends a response to the host device. All responses from the scaler to the host end with a carriage return and a line feed (CR/LF = ↴), indicating the end of the response character string (one or more characters).

Scaler-initiated Messages

When a local event such as a front panel selection or adjustment takes place, the DVS 605 scaler responds by sending a message to the host. No response is required from the host. Example scaler-initiated messages are listed here.

- ↴ © Copyright 2012, Extron Electronics, DVS 605, Vx.xx, 60-1059-01 ↴ Thur, 17 February 2012 11:27:33 ↴ The DVS 605 sends the copyright message when it first powers on. Vx.xx is the firmware version number.
- In **[x1]** A11 ↴ (where **[x1]** is the input number during an input switch).
- **Reconfig** ↴ The DVS 605 sends this response when an input is switched or when a new signal is detected.

Copyright Information

↳ © Copyright 2012, Extron Electronics, DVS 605, Vx.xx, 60-1059-01 ↴ Thur, 17 February 2012 11:27:33 ↴ ↴ © Copyright 2012, Extron Electronics, DVS 605, Vx.xx, 60-1059-01 ↴ Thur, 17 February 2012 11:27:33 ↴

The copyright message is displayed upon connecting to an DVS product via TCP/IP or Telnet. Vx.xx is the firmware version number. The current date and time are displayed. This is followed by a Password prompt if a password has been set.

Password Information

The **← Password:** prompt requires a password (administrator level or user level) followed by a carriage return. The prompt is repeated if the correct password is not entered.

If the correct password is entered, the unit responds with **← Login Administrator ←** or **← Login User ←**, depending on password entered. If passwords are the same for both administrator and user, the unit defaults to administrator privileges.

Error Responses

When the DVS 605 receives a valid command, it executes the command and sends a response to the host device. If the unit is unable to execute the command because the command contains invalid parameters, it returns an error response to the host.

Error Numbers

E01 — Invalid input number	E17 — Invalid command for signal type
E06 — Invalid switch attempt in this mode	E22 — Busy
E10 — Invalid command	E24 — Privilege violation
E11 — Invalid preset number	E25 — Device not present
E12 — Invalid port number	E26 — Maximum number of connections exceeded
E13 — Invalid parameter	E28 — Bad filename/file not found
E14 — Not valid for this configuration	

Error Response References

¹⁴ = Commands that give an E14 (invalid command for this configuration) error if sent to a product whose current configuration does not support the command

²⁴ = Commands that give an E24 (privilege violation) error if not logged in at administrator level

²⁸ = Commands that may give an E28 (file not found) error

Commands and Responses

Using the Command and Response Tables

The command and response tables for SIS commands from page 42 onwards lists the commands the DVS 605 recognizes as valid. The tables show the responses that are returned to the host with a description of the command function or command execution results. Also included are examples of command in ASCII (Telnet) and URL encoded (web).

NOTE: Upper and lower case text can be used interchangeably.

ASCII to HEX Conversion Table		Esc 1B	CR 0D	LF 0A				
Space 20	! 21	“ 22	# 23	\$ 24				
(28) 29	* 2A	+ 2B	, 2C				
0 30	1 31	2 32	3 33	4 34				
8 38	9 39	: 3A	; <td>3B</td> <td>< 3C</td> <td>= 3D</td> <td>> 3E</td> <td>? 3F</td>	3B	< 3C	= 3D	> 3E	? 3F
@ 40	A 41	B 42	C 43	D 44	E 45	F 46	G 47	
H 48	I 49	J 4A	K 4B	L 4C	M 4D	N 4E	O 4F	
P 50	Q 51	R 52	S 53	T 54	U 55	V 56	W 57	
X 58	Y 59	Z 5A	[5B	\ 5C] 5D	^ 5E	_ 5F	
~ 60	a 61	b 62	c 63	d 64	e 65	f 66	g 67	
h 68	i 69	j 6A	k 6B	l 6C	m 6D	n 6E	o 6F	
p 70	q 71	r 72	s 73	t 74	u 75	v 76	w 77	
x 78	y 79	z 7A	{ 7B	I 7C	}	7D	~ 7E	DEL 7F

Figure 28. ASCII to Hexadecimal Character Conversion Table

Symbol Definitions

- = Space
- ← = Carriage return with line feed
- | or ← = Carriage return with no line feed

Esc or W = Escape

^{14, 24, 28} = Superscripts indicate the error message displayed if the command is entered incorrectly or with invalid parameters. See ["Error Response References,"](#) on page 35.

[X] = Input selection, 1-5, (0 = current input — 0 is valid only for Input Config settings:
0 = main when PIP is disabled, 0 = PIP when PIP is enabled)

x2 = Output selection:

- 0 = All outputs (default)
- 1 = Analog (VGA, YUVp, HDTV)
- 2 = HDMI
- 3 = 3G/HD-SDI
- 4 = None

x3 = Input video format:

0 = No signal detected (only valid for detected input format query, such as `\x1*` or “I”)
1 = RGB 5 = Composite video
2 = YUV auto 6 = DVI/HDMI (available only for inputs 3, 4, and 5)
3 = RGBcvS 7 = Auto detect (default for inputs 1 and 2)
4 = S-video

[x4] = Horizontal/vertical start — 0 to 255 (default midpoint = 128)

X5 = Pixel phase — 0 to 63 (default = 31)

X6 = Total pixels — ±512 of the default value

X7 = Active pixels — ± 512 of the default value

X8 = Active lines — ± 512 of the default value

X9 = Enable/disable: 0 = Off/disable, 1 = On/enable

X10 = Input standard:

0 = No signal detected 3 = NTSC 4.43
1 = NTSC 3.85 4 = SECAM
2 = PAL
- = N/A (occurs when input is an active RGB, YUV auto [but not NTSC/PAL], or HDMI signal)

X11 = Internal temperature (in degrees Celsius)

X12 = Unit name is a text string of up to 24 characters drawn from the alphabet (A-Z), digits (0-9), and the minus sign/hyphen (-). The first character must be an alpha character. The last character must not be a minus. No blank or space characters are permitted, and no distinction is made between upper- and lowercase.

x13 = Horizontal and vertical frequencies (format is three-digit with single decimal and leading zeros for example, 075.3)

X14 = Text label/preset name: up to 16 characters

NOTE: User and input presets saved without a name are saved with the default names "User Preset xx" (for example, User preset 12) or "Input preset xxx" (for example, input preset 122).

X15 = Picture adjustment — 0 to 127 (default = 64)

X16 = Horizontal and vertical position, ± 11000 , with leading "+" or "-", for example "- 02040"

X17 = Horizontal and vertical size, 0 to 11000

X18 = Image/window number: 1 = main window, 2 = PIP window

X19 = Scaler resolution/EDID emulation:

SIS $\boxed{x19}$ variables for EDID resolution/refresh rate combination (where $\boxed{x19} = 10$ through 92)									
Resolution	23.98 Hz	24 Hz	25 Hz	29.97 Hz	30 Hz	50 Hz	59.94 Hz	60 Hz	75 Hz
640x480						10		11	12
800x600						13		14	15
852x480						16		17	18
1024x768						19		20	21
1024x852						22		23	24
1024x1024						25		26	27
1280x768						28		29	30
1280x800						31		32	33
1280x1024						34		35	36
1360x765						37		38	39
1360x768						40		41	42
1365x768						43		44	45
1366x768						46		47	48
1365x1024						49		50	51
1440x900						52		53	54
1400x1050						55		56	
1600x900						57		58	
1680x1050						59		60	
1600x1200						61		62	
1920x1200						63		64	
480p								65	66
576p								67	
720p			68	69	70	71	72	73*	
1080i								74	76
1080p	77	78	79	80	81	82	83	84	
2048x1080 2k	85	86	87	88	89	90	91	92	

* Default output resolution

Figure 29. SIS Command EDID Table

x20 = Test patterns:

- 0 = Off (default)
- 1 = Crop
- 2 = Alternating pixels
- 3 = Alternating lines
- 4 = Crosshatch
- 5 = 4x4 crosshatch
- 6 = Color bars
- 7 = Grayscale

8 = Ramp
9 = White field
10 = 1.33 aspect ratio
11 = 1.78 aspect ratio
12 = 1.85 aspect ratio
13 = 2.35 aspect ratio
14 = Blue mode

X21 = Analog output polarity:

- 0 = H-/V- (default)
- 1 = H-/V+
- 2 = H+/V-
- 3 = H+/V+

X22 = Analog output sync format:

- 0 = RGBHV (default)
- 1 = RGBS
- 2 = RGsB
- 3 = Y, R-Y, B-Y bi-level
- 4 = Y, R-Y, B-Y tri-level

X23 = User presets or PIP presets — 1 to 16

X24 = Input presets — 1 to 128

X25 = On-screen menu time-out or screen saver sync timeout, (default = 3 seconds)/output sync time-out (default = 501 - never)

- 0 = OSD is never displayed/output sync is instantly disabled with no active input
- 1 to 500 in 1 second increments,
- 501 = OSD never times out, output sync is never disabled

X26 = Executive mode status:

- 0 = Off/disable, (default)
- 1 = Exec mode 1 — Complete front panel lockout
- 2 = Exec mode 2 — Partial front panel lockout (only input selection, Auto-Image, and PIP/Swap are still available)

X27 = PIP window input selection: 0 to 4 (0 = off). (Input 5 is not available for PIP mode.)

X28 = Overscan (applied to SMPTE [NTSC, PAL, 480p, 576p, 720p, 1080i, 1080p] input rates):

- 0 = 0.0% (default for RGB/HDMI),
- 1 = 2.5% (default for YUV, RGBcvS, S-video, composite)

X29 = Aspect ratio:

- 1 = Fill: each input rate will automatically fill the entire output raster (default)
- 2 = Follow: each input rate will be displayed with its native aspect ratio

X30 = Screen saver mode:

- 1 = Black screen (default)
- 2 = Blue screen with OSD text

X31 = Video mute:

- 0 = off/disable
- 1 = on/enable (mute to black)
- 2 = mute output sync and video

X32 = Auto-Image threshold value: 0 (black) though 100 (white), default = 25

X33 = HDCP status (valid only on HDMI/DVI outputs):

- 0 = No sink or source detected
- 1 = Sink or source detected with HDCP
- 2 = Sink or source detected but no HDCP is present

X35 = Video switching duration:

from 2 (0.2 sec) to 50 (5.0 sec). Default value is 3 or 0.3 sec

X36 = HDMI output format:

- 0 = Auto (based on sink EDID), default
- 1 = DVI
- 2 = HDMI 444 RGB (0-255, audio, InfoFrames)
- 3 = HDMI 444 YUV "FULL" (0-255, audio, InfoFrames)
- 4 = HDMI 444 YUV "LIMITED" (16-235, audio, InfoFrames)
- 5 = HDMI 422 YUV "FULL" (0-255, audio, InfoFrames)
- 6 = HDMI 422 YUV "LIMITED" (16-235, audio, InfoFrames)

X37 = Auto switch mode:

- 0 = Disable (default)
- 1 = Gives priority to the highest input
- 2 = Gives priority to the lowest input

X38 = Audio volume range: -100 dB to 0 dB, in 1.0 dB steps, default = -30 dB (with leading "-"); where 0 = 0 dB (max volume output)

X39 = Audio output format:

- 1 = Dual mono
- 2 = Stereo (default)

X40 = Audio gain/Attenuation: -53 through + 09 dB, (with leading "+" or "-")

X41 = Audio source:

- 0 = Follow Main window
- 1 = Follow PIP window
- 2 = Toggle source

X42 = Audio input type:

- 0 = None, input is muted (EDID has no CEA extension)
- 1 = Analog, 5-pole captive screw (EDID has no CEA extension)
- 2 = 2Ch digital, embedded in HDMI input, (2Ch PCM audio requested from source via EDID)
- 3 = Full digital (via EDID to allow any digital audio format from source)
- 4 = 2Ch digital, Auto (2Ch PCM audio requested from source via EDID), scaler uses embedded digital audio when present, or defaults to the input's analog 5-pole captive screw
- 5 = Full digital auto (Full audio is requested from source via EDID). Scaler uses embedded digital audio when present, or defaults to input's analog 5-pole captive screw.

NOTES:

- Inputs 1 and 2 can only be set to **X42** = 0 (all models) or 1 (audio model only). Attempting to set these inputs to any other format gives an "E14" error message.
- Non-audio models of the DVS 605 will allow **X42** = 0 on inputs 1 and 2, and **X42** = 0, 2, or 3 on inputs 3, 4, and 5.

X43 = Static audio delay, 0 through 255 milliseconds (default is 0)

NOTE: The static audio delay is in addition to the automatic audio delay that is applied by the DVS 605 to compensate for internal video processing.

X44 = Video signal status

- 0 = Video / TMDS signal not detected
- 1 = Video / TMDS signal detected

X45 = Power save modes

- 0 = Full power mode (default)
- 1 = Low power state

X46 = Screen saver status

- 0 = Active input detected; timer not running
- 1 = No active input; timer is running; output sync still active
- 2 = No active input; timer has expired; output sync disabled

X47 = Input signal/SDI genlock
0 = Disabled; (default)
1 = Input signal genlock enabled; locks output vertical to the selected input vertical rate
2 = SDI genlock enabled; locks output vertical to the applied genlock input ("D" models only)

X48 = Input signal/genlock status
0 = Input signal / SDI genlock disabled
1 = Input signal / SDI genlock enabled, but cannot lock to applied input signal/SDI genlock input. DVS defaults to set output rate/refresh
2 = Input signal/SDI genlock enabled, output locked to applied input signal/SDI genlock input

X49 = Input HDCP HDMI authorization status:
0 = Block HDCP encryption
1 = Allow HDCP encryption (default for inputs 3, 4, and 5)

X50 = Horizontal genlock offset: range is \pm the correct output resolution total pixel value -1
(for example, -2199 to +2199 for 1080p)

X51 = Vertical genlock offset: range is \pm the correct output resolution total line value -1
(for example, -1124 to +1124 for 1080p)

SIS IP command definitions

X100 = Default name: combination of model name and last 3 hex pairs of MAC address
(for example DVS-605-Series-07-8C-EC).

X104 = On/off status: 0 = off/disable; 1 = on/enable

X106 = Unit name is a text string up to 24 characters drawn from the alphabet (A-Z), digits (0-9), minus sign/hyphen (-). No blank or space characters are permitted as part of a name.
No distinction is made between upper and lower case. The first character must be an alpha character. The last character must not be a minus sign/hyphen.

X107 = Local date and time format
Set format is MM/DD/YY-HH:MM:SS; for example, 06/21/02-10:54:00
Read format is day, date month year (HH:MM:SS), for example, Thu, 20 Feb 2003 (18:19:33)

X108 = IP address (xxx.xxx.xxx.xxx); leading zeros in each of 4 fields are optional in setting values, and are suppressed in returned values.

NOTE: DHCP is **disabled by default**. Default IP is 192.168.254.254.

X109 = Hardware (MAC) address (00-05-A6-xx-xx-xx).

X110 = Subnet mask (xxx.xxx.xxx.xxx). Leading zeros are optional in setting values in each of four fields, and are suppressed in returned values. Default subnet mask = 255.255.0.0

X111 = Verbose/Response mode, (default = 0 for telnet connections, 1 for RS-232 and USB host control).
0 = Clear/none;
1 = Verbose mode
2 = Tagged responses for queries
3 = Verbose mode and tagged responses for queries.

NOTE: If tagged responses is enabled, all read commands will return the constant string + the data, like setting the value does.

For example command: **Esc CN ← response: lpn • X106 ←**

X121 = Password (12 characters = maximum length; no special characters are allowed.)

NOTE: A user password cannot be assigned if no administrator password exists; the E14 error code is returned. If the administrator password is cleared, the user password is also removed.

X125 = Connections security level:

0 = anonymous,

1 – 10 = extended security levels 1 thru 10

11 = user,

12 = Administrator

X127 = The number of seconds before timeout on the IP connection: min. = 1; max. = 65000;

(default = 30 = 300 seconds). If no data is received during the timeout period, the Ethernet connection is closed. Each step = 10 seconds. Applicable only when connected via Ethernet. When connected via RS-232 only the global timeout commands apply (current returns E13). Response is returned with leading zeros.

X131 = Firmware Query ('Q' commands)

*Q = Firmware and build number [<X.YY.ZZZZ>]

0Q = Verbose version information [<2Q> - <3Q> - <4Q>] sum of responses from 2Q-3Q-4Q

1Q = Firmware version [<currently running code (X.YY)>]

2Q = Final stage bootloader (Uboot) version [<X.YY>]

3Q = Factory base code version [<factory base code (X.YY)>*<kernel version (X.YY) – description – date loaded >]

4Q = Updated firmware version [<updated code version (X.YY)>*<kernel version (X.YY) – description – date loaded >]

NOTE: For 3Q and 4Q, an asterisk '*' after version number indicates which version is currently running. A question mark (?) indicates that only the factory firmware version is loaded. A caret (^) indicates the firmware version that should be running, but a Mode 1 reset was executed and the default factory firmware is loaded. An exclamation point (!) indicates corrupted firmware.
[Example: 1.03*(1.42-DVS 605 -Thur, 21 Apr 2012 22:30:57 GMT).]

The SIS Command and Response tables start on the next page.

SIS Command and Response Table

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional Description
Input selection			
Video and audio	[X1]!	In [X1]•All←	Select video and audio from input [X1].
Video	[X1]&	In [X1]•RGB←	Select video from input source [X1].
Audio	[X1]\$	In [X1]•Aud←	Select audio from input source [X1].
View video input	&	[X1]←	View current video input [X1].
View audio input	\$	[X1]←	View current audio input [X1].
View current input	!	[X1]←	View current selected input [X1] (video only).
NOTES: See " Video only and Audio only switching (breakaway) Rules " on page 64 for details <ul style="list-style-type: none"> • Audio breakaway (\$) is not allowed TO an input configured for any digital audio format. • Video breakaway (&) is not allowed FROM an input configured for any digital audio format. • Attempting either of these invalid modes gives an E17 error. • Audio breakaway is always allowed back TO the current video input. • When in PIP mode, audio breakaway is not supported. Audio follows either the main window or the PIP window, and is selectable via SIS command. 			
Input video format			
Set video format	[X1]*[X3]\	Typ[X1]*[X3]←	Set input [X1] to format [X3].
View set format	[X1]\	[X3]←	View set video format of input [X1].
View detected format	[X1]*\	[X3]←	View actual video format autodetected on input [X1].
		VTyp[X1]*[X3]←	<i>Verbose mode response</i>
Input EDID (VGA and HDMI)			
Assign EDID to input	[Esc]A[X1]*[X19]EDID←	EdidA[X1]*[X19]←	Assign EDID resolution and refresh rate [X19] for input [X1].
View assigned EDID data	[Esc]A[X1]EDID←	[X19]←	View assigned EDID resolution and refresh rate [X19] for input [X1].
		EdidA[X1]*[X19]←	<i>Verbose mode response</i>
Capture an output EDID to custom slot	[Esc]S[X2]*[X19]EDID←	EdidS[X2]*[X19]←	Capture output [X2] EDID to [X19] (Valid for [X19] = 3, 4, 5, 6, 7 only and [X2] = 1 or 2 only.)
Export EDID file	[Esc]E[X19],<filename> EDID←	EdidE[X19]←	Exports EDID table [X19] to <filename>.
Import EDID file	[Esc]I[X19],<filename> EDID←	EdidI[X19]←	Imports EDID table [X19] from <filename>.
			Import valid for [X19] = 3, 4, 5, 6, and 7.
NOTE: <filename> can optionally carry a full path name: EDID file format is "bin" carrying 128 or 256 bytes of binary data. Exporting a default EDID table (for an [X19] value of 10 or greater) results in the "digital" "2CH Digital" table being exported.			
NOTE: [X1] = Input number: 1 through 5 [X2] = Output selection: 0 = All outputs (default), 1 = Analog (VGA, YUVp, HDTV), 2 = HDMI, 3 = 3G/HD-SDI, 4 = None [X3] = Input video format: 0 = No signal detected, 1 = RGB, 2 = YUV auto, 3 = RGBcvS, 4 = S-video, 5 = Composite, 6 = DVI/HDMI (only available for inputs 3, 4, and 5), 7 = Auto detect (default for inputs 1 and 2) [X19] = Scaler resolution/EDID emulation, 0 = Automatic: match current output resolution (default), 1 = Output 1 analog VGA connector, 2 = Output 2 HDMI connector, 3 = Custom EDID/output rate 1, 4 = Custom EDID/output rate 2, 5 = Custom EDID/output rate 3, 6 = Custom EDID/output rate 4, 7 = Custom EDID/output rate 5. For variables 10-78, see the SIS EDID table on page 36.			

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional Description
Input name			
Write input name	[Esc][X1],[X14]NI ←	Nmi[X1],[X14]←	Set the name [X14] for input [X1].
Read input name	[Esc][X1]NI ←	[X14]←	View input [X1] name [X14].
NOTE: To clear an input name, a single space character should be entered for [X14]. This resets the input name to the default value.			
Auto-Image			
Enable	[X1]*1A	Img[X1]*1←	Activate Auto-Image for input [X1].
Disable	[X1]*0A	Img[X1]*0←	Turn Auto-Image off for input [X1].
View status	[X1]A	[X9]←	View Auto-Image setting: (0 = on, 1 = off).
Execute	0*A	Img0←	Execute an Auto-Image to the selected input (follows current aspect setting).
Execute and Fill	1*A	Img1←	Execute an Auto-Image and fill entire output.
Execute and Follow	2*A	Img2←	Execute an Auto-Image and follow the aspect ratio of the input.
Auto-Image threshold value (minimum luminosity value which the scaler defines as active video for Auto-Image)			
Set value	[Esc][X32]ALVL ←	A1vl[X32]←	Set global Auto-Image luminosity value [X32].
View	[Esc]ALVL ←	[X32]←	View global Auto-Image luminosity value [X32].
Horizontal start			
Specify a value	[Esc][X1]*[X4]HSRT ←	Hsrt[X1]*[X4]←	Set horizontal location of first active pixel for input [X1].
Increment value	[Esc][X1]+HSRT ←	Hsrt[X1]*[X4]←	Increment horizontal start position.
Decrement value	[Esc][X1]-HSRT ←	Hsrt[X1]*[X4]←	Decrement horizontal start position.
View	[Esc][X1]HSRT ←	[X4]←	Show horizontal location of first active pixel for input [X1].
Vertical start			
Specify a value	[Esc][X1]*[X4]VSRT ←	Vsrt[X1]*[X4]←	Set vertical location of first active pixel for input [X1].
Increment value	[Esc][X1]+VSRT ←	Vsrt[X1]*[X4]←	Increase vertical start.
Decrement value	[Esc][X1]-VSRT ←	Vsrt[X1]*[X4]←	Decrease vertical start.
View	[Esc][X1]VSRT ←	[X4]←	Show vertical location of first active pixel for input [X1].

NOTE: [X1] = Input selection: 1 to 5
[X4] = Horizontal/vertical start: 0 to 255 (default midpoint = 128)
[X9] = Enable/disable: 0 = off/disable, 1 = on/enable
[X14] = Text label/preset name, up to 16 characters
[X32] = Auto-Image threshold value: 0 (black) through 100 (white), default = 25

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional Description
Pixel phase (available only for RGB and YUV auto input signals)			
Specify a value	[Esc][X1]*[X5]PHAS←	Phas[X1]*[X5]←	Adjust the pixel phase to specified value [X5] for input [X1].
Increment value	[Esc][X1]+PHAS←	Phas[X1]*[X5]←	Increase the pixel phase.
Decrement value	[Esc][X1]-PHAS←	Phas[X1]*[X5]←	Decrease the pixel phase.
View	[Esc][X1]PHAS←	[X5]←	Show the pixel phase for input [X1].
Total pixels (available only for RGB and YUV auto input signals)			
Specify a value	[Esc][X1]*[X6]TPIX←	Tpix[X1]*[X6]←	Adjust the total pixels to specified value [X6] for input [X1].
Increment value	[Esc][X1]+TPIX←	Tpix[X1]*[X6]←	Increase the total pixels.
Decrement value	[Esc][X1]-TPIX←	Tpix[X1]*[X6]←	Decrease the total pixels.
View	[Esc][X1]TPIX←	[X6]←	Show the total pixels for input [X1].
Active pixels			
Specify a value	[Esc][X1]*[X7]APIX←	Apix[X1]*[X7]←	Adjust the active pixels to a specified value [X7] for input [X1].
Increment value	[Esc][X1]+APIX←	Apix[X1]*[X7]←	Increase the active pixels.
Decrement value	[Esc][X1]-APIX←	Apix[X1]*[X7]←	Decrease the active pixels.
View	[Esc][X1]APIX←	[X7]←	Show the active pixels for input [X1].
Active lines			
Specify a value	[Esc][X1]*[X8]ALIN←	Alin[X1]*[X8]←	Adjust the active lines to a specified value [X8] for input [X1].
Increment value	[Esc][X1]+ALIN←	Alin[X1]*[X8]←	Increase the active lines.
Decrement value	[Esc][X1]-ALIN←	Alin[X1]*[X8]←	Decrease the active lines.
View	[Esc][X1]ALIN←	[X8]←	Show the active lines for input [X1].
3:2, 2:2, and 24:1 Film mode autodetect			
Enable autodetect	[Esc][X1]*1FILM←	Film[X1]*1←	Enable film mode autodetection.
Disable autodetect	[Esc][X1]*0FILM←	Film[X1]*0←	Disable film mode autodetection.
View setting	[Esc][X1]FILM←	[X9]←	View the currently applied film mode detection setting.

NOTE: [X1] = Input selection: 1 to 5

[X5] = Pixel phase: 0 to 63 (default = 31)

[X6] = Total pixels: ± 512 of the default value

[X7] = Active pixels: ± 512 of the default value

[X8] = Active lines: ± 512 of the default value

[X9] = Auto/off: 0 = off/disable, 1 = on/enable

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional Description
Picture Adjustments			
Video mute			
Mute all outputs to black	1B	Vmt1↔	Mutes video and displays black video on all outputs.
Mute all sync and video	2B	Vmt2↔	Mutes sync and video on all outputs.
Unmute all outputs	0B	Vmt0↔	Unmutes all outputs.
View	B	X31↔	View the mute status (0 = disabled, 1 = enabled - mute to black, 2 = mute output sync and video).
Color			
Set a specific value	[Esc]X1*[X15]COLR↔	Colr[X1]*[X15]↔	Set color level to [X15] for input [X1].
Increment value	[Esc]X1+[COLR↔	Colr[X1]*[X15]↔	Increment color level.
Decrement value	[Esc]X1-[COLR↔	Colr[X1]*[X15]↔	Decrement color level.
View	[Esc]X1COLR↔	[X15]↔	View current setting for input [X1].
Tint			
Set a specific value	[Esc]X1*[X15]TINT↔	Tint[X1]*[X15]↔	Set tint level to [X15] for input [X1].
Increment value	[Esc]X1+[TINT↔	Tint[X1]*[X15]↔	Increment tint level.
Decrement value	[Esc]X1-[TINT↔	Tint[X1]*[X15]↔	Decrement tint level.
View	[Esc]X1TINT↔	[X15]↔	View current setting for input [X1].
Contrast			
Set a specific value	[Esc]X1*[X15]CONT↔	Cont[X1]*[X15]↔	Set contrast level to [X15] for input [X1].
Increment value	[Esc]X1+[CONT↔	Cont[X1]*[X15]↔	Increment contrast level.
Decrement value	[Esc]X1-[CONT↔	Cont[X1]*[X15]↔	Decrement contrast level.
View	[Esc]X1CONT↔	[X15]↔	View current setting for input [X1].
Brightness			
Set a specific value	[Esc]X1*[X15]BRIT↔	Brit[X1]*[X15]↔	Set brightness level to [X15] for input [X1].
Increment value	[Esc]X1+[BRIT↔	Brit[X1]*[X15]↔	Increment brightness level.
Decrement value	[Esc]X1-[BRIT↔	Brit[X1]*[X15]↔	Decrement brightness level.
View	[Esc]X1BRIT↔	[X15]↔	View current setting for input [X1].
Detail filter			
Set detail level	[Esc]X1*[X15]HDET↔	Hdet[X1]*[X15]↔	Specify the detail level to [X15] for input [X1].
Increment value	[Esc]X1+[HDET↔	Hdet[X1]*[X15]↔	Increase the detail level.
Decrement value	[Esc]X1-[HDET↔	Hdet[X1]*[X15]↔	Decrease the detail level.
View detail value	[Esc]X1HDET↔	[X15]↔	Show the detail setting for input [X1].

NOTE: [X1] = Input selection: 1 to 5

[X15] = Picture adjustment: 0 to 127 (default = 64)

[X31] = Video mute: 0 = off/disable, 1 = on/enable (mute to black), 2 = mute output sync and video

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional Description
Horizontal position (window)			
Specific value	<code>[Esc]1*[X18]*[X16]HCTR←</code>	<code>Hctr1*[X18]*[X16]←</code>	Set horizontal position to <code>[X16]</code> for window <code>[X18]</code> .
Increment value	<code>[Esc]1*[X18]+HCTR←</code>	<code>Hctr1*[X18]*[X16]←</code>	Shift window right.
Decrement value	<code>[Esc]1*[X18]-HCTR←</code>	<code>Hctr1*[X18]*[X16]←</code>	Shift window left.
View	<code>[Esc]1*[X18]HCTR←</code>	<code>[X16]←</code>	View the horizontal position value <code>[X16]</code> for window <code>[X18]</code> .
Vertical position (window)			
Specific value	<code>[Esc]1*[X18]*[X16]VCTR←</code>	<code>Vctr1*[X18]*[X16]←</code>	Set vertical position to <code>[X16]</code> for window <code>[X18]</code> .
Increment value	<code>[Esc]1*[X18]+VCTR←</code>	<code>Vctr1*[X18]*[X16]←</code>	Shift window down.
Decrement value	<code>[Esc]1*[X18]-VCTR←</code>	<code>Vctr1*[X18]*[X16]←</code>	Shift window up.
View	<code>[Esc]1*[X18]VCTR←</code>	<code>[X16]←</code>	View the vertical position value <code>[X16]</code> for window <code>[X18]</code> .
Horizontal size (window)			
Specific value	<code>[Esc]1*[X18]*[X17]HSIZ←</code>	<code>Hsiz1*[X18]*[X17]←</code>	Set horizontal sizing to <code>[X17]</code> for window <code>[X18]</code> .
Increase size	<code>[Esc]1*[X18]+HSIZ←</code>	<code>Hsiz1*[X18]*[X17]←</code>	Widen the window.
Decrease size	<code>[Esc]1*[X18]-HSIZ←</code>	<code>Hsiz1*[X18]*[X17]←</code>	Make the window narrower.
View	<code>[Esc]1*[X18]HSIZ←</code>	<code>[X17]←</code>	View horizontal sizing value <code>[X17]</code> for window <code>[X18]</code> .
Vertical size (window)			
Specific value	<code>[Esc]1*[X18]*[X17]VSIZ←</code>	<code>Vsiz1*[X18]*[X17]←</code>	Set vertical sizing to <code>[X17]</code> for window <code>[X18]</code> .
Increase size	<code>[Esc]1*[X18]+VSIZ←</code>	<code>Vsiz1*[X18]*[X17]←</code>	Make the window taller.
Decrease size	<code>[Esc]1*[X18]-VSIZ←</code>	<code>Vsiz1*[X18]*[X17]←</code>	Make the window shorter.
View	<code>[Esc]1*[X18]VSIZ←</code>	<code>[X17]←</code>	View vertical sizing value <code>[X17]</code> for window <code>[X18]</code> .
Horizontal position (image)			
Specific value	<code>[Esc]2*[X18]*[X16]HCTR←</code>	<code>Hctr2*[X18]*[X16]←</code>	Set horizontal position to <code>[X16]</code> for image <code>[X18]</code> .
Increment value	<code>[Esc]2*[X18]+HCTR←</code>	<code>Hctr2*[X18]*[X16]←</code>	Shift image right.
Decrement value	<code>[Esc]2*[X18]-HCTR←</code>	<code>Hctr2*[X18]*[X16]←</code>	Shift image left.
View	<code>[Esc]2*[X18]HCTR←</code>	<code>[X16]←</code>	View the horizontal position value <code>[X16]</code> for image <code>[X18]</code> .
Vertical position (image)			
Specific value	<code>[Esc]2*[X18]*[X16]VCTR←</code>	<code>Vctr2*[X18]*[X16]←</code>	Set vertical position to <code>[X16]</code> for image <code>[X18]</code> .
Increment value	<code>[Esc]2*[X18]+VCTR←</code>	<code>Vctr2*[X18]*[X16]←</code>	Shift image down.
Decrement value	<code>[Esc]2*[X18]-VCTR←</code>	<code>Vctr2*[X18]*[X16]←</code>	Shift image up.
View	<code>[Esc]2*[X18]VCTR←</code>	<code>[X16]←</code>	View the vertical position value <code>[X16]</code> for image <code>[X18]</code> .

NOTE: `[X16]` = Horizontal and vertical position: ± 11000 , with leading "+" or "-", for example "- 02040"

`[X17]` = Horizontal and vertical size: 0 to 11000

`[X18]` = Image/window number: 1 = main window, 2 = PIP window

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional Description
Horizontal size (image)			
Specific value	[Esc]2*[X18]*[X17]HSIZ←	Hsiz2*[X18]*[X17]←	Set horizontal sizing to [X17] for image [X18].
Increase width	[Esc]2*[X18]+HSIZ←	Hsiz2*[X18]*[X17]←	Widen the image.
Decrease width	[Esc]2*[X18]-HSIZ←	Hsiz2*[X18]*[X17]←	Make the image narrower.
View	[Esc]2*[X18]HSIZ←	[X17]←	View horizontal sizing value [X17] for image.
Vertical size (image)			
Specific value	[Esc]2*[X18]*[X17]VSIZ←	Vsiz2*[X18]*[X17]←	Set vertical sizing to [X17] for image [X18].
Increase height	[Esc]2*[X18]+VSIZ←	Vsiz2*[X18]*[X17]←	Make the image taller.
Decrease height	[Esc]2*[X18]-VSIZ←	Vsiz2*[X18]*[X17]←	Make the image shorter.
View	[Esc]2*[X18]VSIZ←	[X17]←	View vertical sizing value [X17] for image.
Output Configuration			
Output scaler rate			
Set output rate	[Esc][X19]RATE←	Rate[X19]←	Select output resolution and refresh rate.
View output rate	[Esc]RATE←	[X19]←	Show selected output rate.
Output polarity (valid when VGA format is set to RGBHV)			
Set polarity	[Esc][X21]OPOL←	Opol[X21]←	Set polarity for VGA RGBHV output.
View polarity setting	[Esc]OPOL←	[X21]←	Show current output polarity.
VGA output sync format			
Set format	[Esc][X22]OSYN←	Osyn[X22]←	Set output sync format of the VGA output.
View sync setting	[Esc]OSYN←	[X22]←	Show current output sync format.
HDMI output format			
Set format	[Esc][X36]VTPO←	Vtpo[X36]←	Set output color space/format [X36] for the HDMI output.
View setting	[Esc]VTPO←	[X36]←	Show current HDMI format.
Power save mode			
Power save off	[Esc]0PSAV←	Psav0←	DVS runs in full power mode (default).
Power save on	[Esc]1PSAV←	Psav1←	DVS enters low power mode. Can only be exited using [Esc]0PSAV← command.
View setting	[Esc]PSAV←	[X45]←	View power save status.

NOTE: [X17] = Horizontal and vertical size: 0 to 11000

[X18] = Image /window number: 1 = main window, 2 = PIP window

[X19] = Scaler resolution/EDID emulation:

Examples: 1024x768/60, 720p/60, 1080p/60, 1920x1200/60. [See EDID table](#) on page 36 for full details.

[X21] = Output polarity: 0 = H-/V- (default), 1 = H-/V+, 2 = H+/V-, 3 = H+/V+

[X22] = Output sync format: 0 = RGBHV (default), 1 = RGBS, 2 = RGsB, 3 = Y, R-Y, B-Y bi-level, 4 = Y, R-Y, B-Y tri-level

[X36] = HDMI output format:

0 = Auto (based on sink EDID), default

1 = DVI

2 = HDMI 444 RGB (0-255, audio, InfoFrames)

3 = HDMI 444 YUV "FULL" (0-255, audio, InfoFrames)

4 = HDMI 444 YUV "LIMITED" (16-235, audio, InfoFrames)

5 = HDMI 422 YUV "FULL" (0-255, audio, InfoFrames)

6 = HDMI 422 YUV "LIMITED" (16-235, audio, InfoFrames).

[See HDMI output format](#) on page 38 for details.

[X45] = Power save mode: 0 = full power mode (default), 1 = low power state

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional Description
Screen saver mode (action that takes place when no signal is detected on the selected input)			
Set mode	[Esc]M[X30]SSAV←	SsavM[X30]←	Sets the screen saver mode to [X30] (default: 1 = black).
View mode	[Esc]MSSAV←	[X30]←	View the current screen saver mode.
Set sync timeout duration	[Esc]T[X25]SSAV←	SsavT[X25]←	Sets sync timeout duration to [X25] seconds (default: 501 = never).
View sync timeout duration	[Esc]TSSAV←	[X25]←	View sync timeout duration [X25] .
View screen saver status	[Esc]SSSAV←	[X46]←	View the screen saver status [X46] .
Audio Configuration			
Audio mute (global settings)			
Mute on	1Z	Amt1←	Mute selected input.
Mute off	0Z	Amt0←	Un-mute selected input.
View status	Z	[X9]←	View mute status (0 = mute off, 1 = mute on).
Audio gain and attenuation (audio models only: per analog input)			
Set gain/attenuation	[X40]G	Aud[X40]←	Set gain/attenuation on current input to [X40] dB.
Increment	+G	Aud[X40]←	Increment audio level (up).
Decrement	- G	Aud[X40]←	Decrement audio level (down).
View	G	[X40]←	View current audio level.
Volume control (audio models only)			
Set specific volume	[X38]V	Vol[X38]←	Set volume to [X38] .
Increment	+V	Vol[X38]←	Increase volume.
Decrement	- V	Vol[X38]←	Decrease volume.
View	V	[X38]←	View current volume setting.
Audio delay (available on all models)			
Set static delay	[Esc]S[X43]ADLY←	AdlyS[X43]←	Set static audio delay to [X43] ms (range = 0-255 ms).
View setting	[Esc]SADLY←	[X43]←	View audio delay ([X43]) in milliseconds.

NOTE: **[X9]** = Enable/disable; 0 = Off/disable, 1 = On/enable

[X25] = On-screen menu time-out: (default = 3 seconds), output sync time-out (default = 501 - never)
0 = OSD never displayed/output sync is instantly disabled with no active input,

1 to 500, in 1 second increments, 501 = OSD never times out/output sync never times out

[X30] = Screen saver mode: 1 = Black screen (default), 2 = Blue screen with OSD text

[X38] = Audio volume range: 000 to -100 dB (default = -30 dB), in 1.0 dB step, with max = 0 dB and min = -100 dB.
attenuation, plus hardware mute

[X40] = -53 through +09 dB, (with leading "+" or "-")

[X43] = Static audio delay: 0 through 255 milliseconds

[X46] = Screen saver status: 0 = Active input detected; timer not running, 1 = No active input; timer is running;
output sync still active, 2 = No active input; timer has expired; output sync disabled

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional Description
Audio input format			
NOTES: <ul style="list-style-type: none"> • Selects between analog (5-pole captive screw) or digital (embedded in HDMI input) audio sources. • Inputs 1 and 2 X42 can only be set to 0 or 1; attempting to set these inputs to a digital format yields an E14 response. • Digital auto modes (4 or 5) detect and use embedded audio when present, or analog audio if digital audio is not detected 			
Set to None	[Esc]I[X1]*0AFMT←	AfmtI[X1]*0←	Mutes all audio for input X1 .
Set to Analog	[Esc]I[X1]*1AFMT←	AfmtI[X1]*1←	Select analog audio for input X1 (default for inputs 1 and 2).
Set to 2Ch digital	[Esc]I[X1]*2AFMT←	AfmtI[X1]*2←	Select 2Ch digital audio for input X1 (default for inputs 3, 4, and 5).
Set to Full digital	[Esc]I[X1]*3AFMT←	AfmtI[X1]*3←	Select Full digital audio for input X1 .
Set to 2Ch digital auto	[Esc]I[X1]*4AFMT←	AfmtI[X1]*4←	Select auto detect audio for input X1 (valid for inputs 3, 4, and 5 only — EDID set to 2Ch).
Set to Full digital auto	[Esc]I[X1]*5AFMT←	AfmtI[X1]*5←	Select auto detect audio for input X1 (valid for inputs 3, 4, and 5 only — EDID set to Full).
View audio type	[Esc]I[X1]AFMT←	X42←	View the audio input type X42 for input X1 .
Audio output format			
Set format	[Esc]0[X39]AFMT←	Afmt0[X39]←	Set the fixed and variable audio output format.
View format	[Esc]OAFMT←	[X39]←	View audio output format.
Audio follow			
Set	[Esc]X41]AFLW←	Aflw[X41]←	Select audio source (main versus PIP).
View	[Esc]AFLW←	[X41]←	View audio source (main versus PIP).

NOTE: **X1** = Input selection: 1 to 5

X39 = Audio output format: 1 = dual mono, 2 = stereo (default)

X41 = Audio source: 0 = Follow Main window, 1 = Follow PIP window, 2 = Toggle source

X42 = Audio input type: 0 = none, 1 = analog, 2 = 2Ch digital, 3 = Full digital, 4 = 2Ch digital auto, 5 = Full digital auto

See **X42** for full variable description on page 38.

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional Description
Presets			
User presets			
Recall preset	1*[X23].	1Rpr X23 ←	Recall user preset X23 for selected input.
Save preset	1*[X23],	1Spr X23 ←	Save user preset X23 for selected input.
Delete/clear preset	[Esc]X1*[X23]PRST←	PrstX1*[X23 ←	Clears user preset X23 , and sets user preset X23 name to [unassigned].
User preset name			
Write name	[Esc]1*[X23], X14 PNAM←	Pnam1*[X23], X14 ←	Set the user preset X23 name to X14 .
Read name	[Esc]1*[X23]PNAM←	X14 ←	Read the name for user preset X23 .
NOTE: To restore a default user preset name, enter a single space character for X14 ; unassigned presets = "[unassigned]". Valid only for previously saved presets.			
Input presets			
Recall preset	2*[X24].	2Rpr X24 ←	Recall input preset X24 for selected input.
Save preset	2*[X24],	2Spr X24 ←	Save input preset X24 for selected input.
Delete/clear preset	[Esc]X2*[X24]PRST←	PrstX2*[X24 ←	Clears input preset X24 , and sets input preset X24 name to [unassigned].
Input preset name			
Write name	[Esc]2*[X24], X14 PNAM←	Pnam2*[X24], X14 ←	Set the input preset X24 to X14 .
Read name	[Esc]2*[X24]PNAM←	X14 ←	Read the name for input preset X24 .
NOTE: To restore a default input preset name, enter a single space character for X14 ; unassigned presets = "[unassigned]".			
PIP presets			
Recall preset without input	3*[X23].	3Rpr X23 ←	Recall PIP preset X23 without inputs.
Recall preset with input	4*[X23].	4Rpr X23 ←	Recall PIP preset X23 with inputs.
Save preset	4*[X23],	4Spr X23 ←	Save PIP layout and inputs to preset X23 .
Delete/clear preset	[Esc]X4*[X23]PRST←	PrstX4*[X23 ←	Resets the PIP preset X23 , and PIP preset X23 name back to default factory settings.
PIP preset name			
Write name	[Esc]3*[X23], X14 PNAM←	Pnam3*[X23], X14 ←	Set the PIP preset X23 to X14 .
Read name	[Esc]3*[X23]PNAM←	X14 ←	Read the name for PIP preset X23 .
NOTE: To restore a default PIP preset name, enter a single space character for X14 ; default = "PIP preset XX" where "XX" is the current preset number (for example 05).			
NOTE: X14 = Text label/preset name: up to 16 characters X23 = User presets or PIP presets: 1 to 16 X24 = Input presets: 1 to 128			

User Presets		Input Presets			PIP Presets		
Color	H/V Window Position	Input Type	Color	H Start	H/V Window Position	Main H/V Window Position	PIP H/V Window Position
Tint	H/V Window Size	Preset Name	Tint	V Start	H/V Window Size	Main H/V Window Size	PIP H/V Window Size
Contrast	H/V Image Position	Audio Gain/Attenuation	Contrast	H Active	H/V Image Position	Main H/V Image Position	PIP H/V Image Position
Brightness	H/V Image Size		Brightness	V Active	H/V Image Size	Main H/V Image Size	PIP H/V Image Size
Detail			Detail	Phase		Main Input #	
Preset Name			Film Mode	Total Pixels		PIP Input #	

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional Description
Advanced Configuration			
Test pattern			
Set test pattern	[Esc][X20]TEST ←	Test[X20]←	Set the test pattern to [X20].
View test pattern	[Esc]TEST ←	[X20]←	View the current test pattern.
Freeze			
Freeze all windows	1F	Frz1 ←	Freeze Main and PIP input windows.
Freeze only MAIN window	2F	Frz2 ←	Freezes Main input window.
Freeze only PIP window	3F	Frz3 ←	Freeze PIP input windows.
Disable	ØF	FrzØ ←	Unfreeze all windows.
View	F	[X9] ←	Show the freeze status (1= all frozen, 2 = Main frozen, 3 = PIP frozen, 0= all unfrozen).
Auto memories (per input)			
Enable	[Esc][X1]*1AMEM ←	Amem[X1]*1 ←	Set auto memory on. Previous settings for incoming signal are auto recalled.
Disable	[Esc][X1]*ØAMEM ←	Amem[X1]*Ø ←	Set auto memory off. Manual recall of input presets needed to configure input.
View setting	[Esc][X1]AMEM ←	[X9] ←	View current auto memory for input [X1].
Input aspect ratio (per input)			
Enable Fill mode	[Esc][X1]*1ASPR ←	Aspr[X1]*1 ←	Sets input [X1] to always fill the entire raster (default).
Enable Follow mode	[Esc][X1]*2ASPR ←	Aspr[X1]*2 ←	Sets input [X1] to preserve its native aspect.
View aspect setting	[Esc][X1]ASPR ←	[X29] ←	View aspect ratio setting for input [X1].
Auto switch mode			
Disable	[Esc]ØAUSW ←	AuswØ ←	Manual switching only (default).
Priority to highest active	[Esc]1AUSW ←	Ausw1 ←	Gives priority to the highest numbered active input.
Priority to lowest active	[Esc]2AUSW ←	Ausw2 ←	Gives priority to the lowest numbered active input.
View setting	[Esc]AUSW ←	[X37] ←	View the current auto switch mode.

NOTE: [X1] = Input selection: 1 to 5

[X9] = Enable/disable: 0 = off/disable, 1 = on/enable

[X20] = Test patterns:

0 = off (default)	4 = crosshatch	8 = ramp	12 = 1.85 aspect ratio
1 = crop	5 = 4x4 crosshatch	9 = white field	13 = 2.35 aspect ratio
2 = alternating pixels	6 = color bars	10 = 1.33 aspect ratio	14 = blue mode
3 = alternating lines	7 = grayscale	11 = 1.78 aspect ratio	

[X29] = Aspect ratio:

1 = fill; each input rate will automatically fill the entire output raster (default)
2 = follow; each input rate will be displayed with its native aspect ratio

[X37] = Auto switch mode: 0 = disable (default), 1 = priority to highest numbered input

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional Description
Video effect			
Cut	[Esc]0SWEF←	Swef0←	Sets the switch to cut.
Dissolve	[Esc]1SWEF←	Swef1←	Sets the switch to dissolve.
View setting	[Esc]SWEF←	0← (or 1←)	View setting (0 = cut, 1 = dissolve).
Effect duration			
Set dissolve duration	[Esc][X35]EDUR←	EDUR[X35]←	Sets the effect duration to tenths of seconds (range 2 = 0.2 to 50 = 5.0 seconds. Default is 3 = 0.3 seconds).
View duration	[Esc]EDUR←	[X35]←	View effect duration.
Front panel security lockout (Executive Mode)			
Enable Executive mode 1	1X	Exe1←	Lock entire front panel.
Enable Executive mode 2	2X	Exe2←	Limited front panel adjustments (input selection, PIP/Swap, and Auto- Image) can be made.
Disable Executive mode	0X	Exe0←	Unlock front panel controls. All front panel adjustments can be made.
View Executive mode status	X	0← (or 1←) (or 2←)	View the current status: 0 = off [default]; 1 = on, complete; 2 = on, limited adjustments.
Overscan mode (applies only to SMPTE [NTSC, PAL, 480p, 576p, 720p, 1080i, 1080p] input rates)			
Set value	[Esc][X3]*[X28]OSCN←	Oscn[X3]*[X28]←	Set input format [X3] to overscan mode [X28] .
View status	[Esc][X3]OSCN←	[X28]←	Show overscan mode status for input format [X3] .
HDCP notification (green screen/message)			
Enable notification	[Esc]N1HDCP←	HdcpN1←	Enable the HDCP notification.
Disable notification	[Esc]N0HDCP←	HdcpN0←	Disable the HDCP notification; instead mute output.
Query notification	[Esc]NHDCP←	[X9]←	Query the HDCP notification.
HDCP status (valid for HDMI inputs and HDMI oututs only)			
Query input	[Esc]I[X1]HDCP←	[X33]← HdcpI[X1]*[X33]←	Query the HDCP status of the current input [X1] . <i>Verbose mode response</i>
Query output	[Esc]O[X2]HDCP←	[X33]← HdcpO[X2]*[X33]←	Query the HDCP status of the HDMI output [X2] . <i>Verbose mode response</i>

NOTE: **[X1]** = Input selection: 1 to 5

[X2] = Output selection: 0 = all outputs (default), 1 = analog (VGA, YUVp, HDTV), 2 = HDMI, 3 = 3G/HD-SDI, 4 = none

[X3] = Input video format: 0 = no signal detected, 1 = RGB, 2 = YUV auto, 3 = RGBcvS, 4 = S-video, 5 = composite, 6 = DVI/HDMI (only available for inputs 3, 4, and 5), 7 = Autodetect (default for inputs 1 and 2)

[X9] = Enable/disable: 0 = off/disable, 1 = on/enable

[X28] = Overscan (applied to SMPTE [NTSC/PAL - 480p -1080p] input rates), 0 = 0.0% (default for RGB/HDMI), 1 = 2.5% (default for YUV, RGBcvS, S-video composite). [See \[X28\] on page 37 for details.](#)

[X33] = HDCP status (valid only on HDMI/DVI outputs): 0 = no sink or source detected, 1 = sink or source detected with HDCP, 2 = sink or source detected but no HDCP is present

[X35] = Effect duration: from 2 to 50, in 0.1 second steps (where 2 = 0.2 seconds, 50 = 5.0 seconds), default = 3 (0.3 seconds)

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional Description
HDCP input authorization (valid for HDMI inputs only)			
HDCP Authorized device on	[Esc]E[X1]*1HDCP←	HdcpE[X1]*1←	Turn HDCP Authorized device on for input [X1] (default).
HDCP Authorized device off	[Esc]E[X1]*0HDCP←	HdcpE[X1]*0←	Turn HDCP Authorized device off for input [X1] .
Query HDCP Authorized Device status	[Esc]E[X1]HDCP←	X49←	Query HDCP Authorized device status for input [X1] .
Genlock			
Disable genlock	[Esc]OGLOK←	Glok0←	Disables global input lock/genlock (default).
Enable input signal genlock	[Esc]1GLOK←	Glok1←	Locks the output refresh rate to the selected input's refresh rate.
Enable SDI genlock	[Esc]2GLOK←	Glok2←	Locks the output refresh rate applied genlock signal (D models only).
View genlock setting	[Esc]GLOK←	X47←	View the current genlock setting.
View genlock status	[Esc]41STAT←	X48← 41Stat•X48←	View the current genlock status. <i>Verbose mode response</i>
Genlock/AFL Offset			
NOTES: Genlock offset commands will return an error unless: a) a DVS 605 D or AD is present, b) SDI genlock is currently enabled, and c) Genlock is currently locked to an applied genlock reference. Genlock offsets apply only to the current output resolution, and reset to 0,0 when the output resolution is adjusted.			
Set horizontal offset	[Esc]H[X50]GLOF←	GlofH[X50]←	Sets the horizontal genlock offset to [X50] pixels, (where [X50] = horizontal pixel offset; range is +/- the current output resolution total pixel value -1, (for example, -2199 to +2199 for 1080p).
View horizontal offset	[Esc]HGLOF←	X50←	View the horizontal genlock offset [X50] , (default = 0).
Set vertical offset	[Esc]V[X51]GLOF←	GlofV[X51]←	Sets the vertical genlock offset to [X51] pixels, where [X51] = genlock line delay; range is +/- the current output resolution total line value - 1, (for example, -1124 to +1124 for 1080p).
View vertical offset	[Esc]VGLOF←	X51←	View the vertical genlock offset [X51] , (default = 0).
Video signal presence			
View signal presence	0LS	X44*X44*X44*X44*X44←	Signal status for input 1*2*3*4*5. [X44] : 0 = no input, 1 = input detected.

NOTE: **[X1]** = Input selection, 1 to 5

[X44] = Video signal status: 0 = video / TMDS signal not detected, 1 = video / TMDS signal detected

[X47] = Input signal/SDI genlock: 0 = disabled (default), 1 = input signal enabled, 2 = SDI genlock enabled.

[See command description](#) on page 40 for details.

[X48] = Input signal / genlock Status: 0 = genlock disabled, 1 = genlock enabled; not locked, 2 = genlock enabled; locked.

[See command description](#) on page 40 for full details.

[X49] = HDMI Input HDCP authorization status: 0 = block HDCP encryption, 1 = allow HDCP encryption (default for inputs 3, 4, and 5)

[X50] = Horizontal genlock offset: range is ± the correct output resolution total pixel value -1 (for example, -2199 to +2199 for 1080p)

[X51] = Vertical genlock offset: range is ± the correct output resolution total line value -1 (for example, -1124 to +1124 for 1080p)

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional Description
Hardwired IR port			
Enable IR port (allows IR)	65*0#	IRDisable0 \leftarrow	Enables the hard wired port and allows IR control input.
Disable IR port (blocks IR)	65*1#	IRDisable1 \leftarrow	Disables the hard wired port (default).
View IR setting	65#	X9 \leftarrow	View the current IR Disable setting.
Picture In Picture			
NOTE: HDMI input 5 cannot be used for PIP.			
PIP on/off			
PIP on	[Esc]X27 PIP \leftarrow	PipX27 \leftarrow	Turn on PIP and display input [X27]. [X27] is a two digit response (for example, 01).
PIP off	[Esc]0 PIP \leftarrow	Pip00 \leftarrow	Turn PIP off.
View PIP selection	[Esc]PIP \leftarrow	X27 \leftarrow	View PIP selection ([X27] is a two digit response, for example, 01).
Swap main/PIP windows			
Swap	%	Tke \leftarrow	Swap between main and PIP window.
On-Screen Menu time-out			
NOTE: Setting the time-out to 501 disables the OSD time-out (never times out). Setting the time-out to 0 disables the OSD.			
Set menu time-out	[Esc]X25 MDUR \leftarrow	MdurX25 \leftarrow	Set the OSD to [X25] seconds.
View time-out	[Esc]MDUR \leftarrow	X25 \leftarrow	View time-out settings.
Reset commands			
Erase user web pages and files ^{24 28}	[Esc]<filename>EF \leftarrow	Del•<filename> \leftarrow	Erase named files.
Erase current directory and files ^{24 28}	[Esc]/EF \leftarrow	Dd1 \leftarrow	Erase current directory and its files.
Erase current directory and subdirectories ^{24 28}	[Esc]/ /EF \leftarrow	Dd1 \leftarrow	Erase current directory and its subdirectories.
Erase flash memory ²⁴	[Esc]ZFFF \leftarrow	Zpf \leftarrow	Erase the flash memory.
Reset all device settings to factory default settings ²⁴	[Esc]ZXXX \leftarrow	Zpx \leftarrow	Retains Ethernet settings
Absolute system reset ²⁴	[Esc]ZQQQ \leftarrow	Zpq \leftarrow	Includes resetting networking to DHCP = Off, IP = 192.168.254.254 (default address)
Absolute system reset (but retain IP) ²⁴	[Esc]ZY \leftarrow	Zpy \leftarrow	
NOTE: This reset [Esc]ZY is similar to ZQQQ but excludes IP address, subnet mask, gateway addresses, unit name, DHCP setting, and port mapping (Telnet/web/direct access) in order to maintain communications with device. Recommended after a firmware update.			

NOTE: X9 = Enable/disable: 0 = off/disable, 1 = on/enable

X25 = On-screen menu time-out: (default = 3 seconds)/output sync time-out (default = 501 - never)

0 = OSD never displayed/output sync is instantly disabled with no active input,

1 to 500 in 1 second increments, 501 = OSD never times out/output sync never times out

X27 = PIP window input selection: 0 to 4 (0 = off)

Command	ASCII Command (host to scaler)	Response (scaler to host)	Additional Description
Information request			
General information	I / i	Vid _{X1} •Aud _{X1} •Vtyp _{X3} •Std _{X10} •Blk _{X31} •Hrt _{X13} •Vrt _{X13} •Pip _{X1} ◀	
NOTE: Aud " _{X1} " response is a "-" on the non audio model. "Vtyp" returns the detected input type (_{X1} *).			
NOTE: Blk " _{X31} " response is "0" unless video is muted, then the response is "1"			
Query firmware version	Q / q	x . xx◀	View firmware version.
Query full firmware version	*Q / *q	x . xx . xxxx◀	View full firmware version details.
Query part number	N / n	zz - zzz - zz◀	View part number.
View internal temperature	[Esc]20STAT ◀	Stat20• _{X11} ◀	Temperature in degrees Celsius.
Backup/restore configuration			
NOTE: {config type} = 0 = IP config (ip.cfg), 1 = event config (event.cfg), 2 = unit specific parameters (box.cfg), The files are stored on directory /nortxe-backup created on the unit by the "save" commands.			
Save device configuration	[Esc]1* {config type} XF◀	Cfg1*{config type}◀	Save unit configuration to file system.
Restore device configuration	[Esc]0* {config type} XF◀	Cfg1*{config type}◀	Restore unit configuration from file system.
Product naming			
NOTE: The 24 superscript shown below indicates that the user will get an E24 error on an IP Link-based device (such as the DVS 605) if the user is not logged in as Administrator when trying to alter names.			
Set unit name ²⁴	[Esc]X12 CN◀	Ipn• _{X12} ◀	Set unit name to _{X12} .
Set unit name to factory default ²⁴	[Esc]• CN◀	Ipn• _{X100} ◀	Set unit name to default _{X100} .
View unit name	[Esc] CN◀	_{X12} ◀	View unit name.

NOTE: _{X1} = Input selection, 1 to 5
_{X3} = Input video format, 0 = No signal detected (only valid for detected input format query, such as X!*), 1 = RGB, 2 = YUV Auto, 3 = RGBcvS, 4 = S-video, 5 = Composite, 6 = DVI/HDMI (Only available for IN3, IN4, and IN5)
_{X10} = Input standard, 0 = No signal detected (current input), 1 = NTSC 3.85, 2 = PAL, 3 = NTSC 4.43, 4 = SECAM
- = N/A (occurs when input is an active RGB, YUV Auto [but not NTSC/PAL], or HDMI signal)
_{X11} = Internal temperature (in degrees Celsius)
_{X12} = Unit name is a text string of up to 24 characters drawn from the alphabet (A-Z), digits (0-9), and the minus sign/hyphen (-). The first character must be an alpha character. The last character must not be a minus. No blank or space characters are permitted, and no distinction is made between upper- and lowercase.
_{X13} = Horizontal and vertical frequencies (format is three digit with single decimal and leading zeros for example, 075.3)
_{X31} = Video mute: 0 = off/disable, 1 = on/enable (mute to black)
_{X100} = Default name: combination of model name and last 3 pairs of MAC address (for example DVS-605-Series-07-8C-EC)

SIS Command and Response Table for IP Control Port

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (host to processor)	Response (processor to host)	Additional Description
Ethernet data port				
Set current connection port timeout	<code>Esc0*X127TC←</code>	W 0%2A X127 TC	Ph0* X127 ↓	
View current connection port timeout	<code>Esc0TC←</code>	W 0TC	X127 ↓	
Set global IP port timeout	<code>Esc1*X127TC←</code>	W 1%2A X127 TC	Pt1* X127 ↓	
View global IP port timeout	<code>Esc1TC←</code>	W 1TC	X127 ↓	
Firmware version requests				
NOTE: An asterisk (*) after the version number indicates the version currently running. Caret (^) indicates bad checksum/invalid load. Question marks (?) indicate version not loaded.				
Query firmware version	Q or 1Q	X131 ↓	Show the scalar firmware version number X131 to two decimal places. Gives the number of the currently running version of the user-updatable firmware.	
Query verbose version information	0Q	All responses from 2Q-3Q-4Q↓	Show bootstrap, factory-installed, and updated firmware versions. (See 2Q, 3Q, and 4Q, below)	
<i>Example:</i>	1Q	1Q	1.01	
Query bootstrap version	2Q	X131 ↓	The bootstrap firmware is not user-replaceable but you may need this information for troubleshooting.	
<i>Example:</i>	2Q	2Q	0.06	
Query factory firmware version	3Q	X131 (plus web ver.-desc-date/time)↓	Factory-installed firmware is not user-replaceable. This firmware is the version the processor reverts to after a mode 1 reset (see "Operation" section).	
<i>Example:</i>	3Q	1.00(1.37-DVS 605 Series -Fri, 12 Aug 2012 03:28:10 GMT)	In this example, the factory firmware version is 1.00, (the kernel version 1.37), for the DVS 605, dated 12 August, 2012.	

NOTE: **X127** = The number of seconds before timeout on the IP connection: (min. = 1; max. = 65000; default = 30 = 300 seconds)

X131 = Version number (listed to 2 decimal places)

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (host to processor)	Response (processor to host)	Additional Description
Query updated firmware version	4Q		X31 ↴	Use this command to find out which version of firmware has been uploaded into the processor post-factory.
Example:				In this example, firmware version is 1.01, kernel version 1.46, for DVS 605, dated 17 Jan, 2012..
Information requests				
Request processor part number	N		60-1059-XX ↴	Show processor part number.
Request model name	1i		DVS 605 X ↴	Show processor model name.
Request model description	2i		Extron Electronics Digital Video Scaler ↴	Show type of unit.
Request system memory usage	3i		# Bytes used out of #Kbytes ↴	Show amount of memory used and total available memory for system operations.
Request user memory usage	4i		# Bytes used out of #Kbytes ↴	Show amount of user memory used and total available user memory.
IP setup commands				
Set time/date ²⁴	Esc X107 CT ↴		W X107 CT	X107 is local date and time format. The set format is MM/DD/YY-HH:MM:SS. Example: 11/18/12-10:54:00
Read time/date	Esc CT ↴		X107 ↴	The Read format is day of week DD month year HH:MM:SS. Example: Tue, 18 Nov 2012 18:19:33.
Set DHCP on ²⁴	Esc 1DH ↴		W1DH	
Set DHCP off ²⁴	Esc 0DH ↴		W0DH	
View DHCP mode	Esc DH ↴		WDH	X104 = 0 (off) or 1 (on).

NOTE: **X104** = on/off 0 = off/disable, 1 = on/enable
X107 = Local date and time format **Set** format (MM/DD/YY-HH:MM:SS); for example, 06/21/02-10:54:00. **Read** format (day of week, date month year (HH:MM:SS)),
X31 = Version number listed to 2 decimal places

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (host to processor)	Response (processor to host)	Additional Description
Set IP address ²⁴	<code>Esc [X108]C←</code>	<code>W[X108]C </code>	<code>lpi•[X108]↓</code>	<code>[X108]</code> = IP address (xxx.xxx.xxx.xxx). Leading zeros in each of the four fields are optional in setting values.
Read IP address ²⁴	<code>Esc C←</code>	<code>WC </code>	<code>[X108]↓</code>	Leading zeros in each of the four fields are suppressed in returned values.
Read hardware address (MAC)	<code>Esc CH←</code>	<code>WCH </code>	<code>[X109]↓</code>	<code>[X109]</code> = hardware media access control (MAC) address (xx-xx-xx-xx-xx-xx).
Set subnet mask ²⁴	<code>Esc [X10]CS←</code>	<code>W[X10]CS </code>	<code>lps[X110]↓</code>	<code>[X110]</code> is the subnet mask (xxx.xxx.xxx.xxx). Syntax is the same as for the IP addresses. Leading zeros are optional in setting values.
Read subnet mask	<code>Esc CS←</code>	<code>WCS </code>	<code>[X110]↓</code>	Leading zeros are suppressed.
Set gateway IP address ²⁴	<code>Esc [X10]CG←</code>	<code>W [X10]CG </code>	<code>lpg•[X108]↓</code>	<code>[X108]</code> is the IP address. Leading zeros are optional.
Read gateway IP address	<code>Esc CG←</code>	<code>WCG </code>	<code>[X108]↓</code>	
NOTE: Changes made to any Ethernet settings do not take effect until the reboot networking command (2BOOT) is issued.				
Reboot network	<code>Esc 2BOOT←</code>		<code>Boot2↓</code>	Restarts network connections after IP address or DHCP changes.

NOTE: `[X108]` = IP address (xxx.xxx.xxx.xxx); leading zeros in each of 4 fields are optional in setting values, and are suppressed in returned values
`[X109]` = Hardware (MAC) address (xx-xx-xx-xx-xx)
`[X110]` = Subnet mask (xxx.xxx.xxx.xxx). Leading zeros are optional in setting values in each of four fields, and are suppressed in returned values.

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (host to processor)	Response (processor to host)	Additional Description
NOTE: A user password cannot be assigned if an administrator password does not exist. Entering a password when the DVS 605 has not been configured yields an E14 response from the processor. If the administrator password is cleared (removed), the user password is also removed.				
Read administrator password	<code>Esc CA↓</code>		<code>WCA </code> <code>X21↓</code>	
Set administrator password ²⁴	<code>Esc X121CA↓</code>	<code>W[X121]CA </code>	<code>lpa[X121]↓</code>	Set the administrator access password. <code>X121</code> is 4-12 alphanumeric characters. The password is case sensitive. Special characters (spaces or symbols) are not allowed.
Clear administrator password ²⁴	<code>Esc•CA↓</code>	<code>W%20CA </code>	<code>lpa•↓</code>	Clear/remove all passwords (administrator and user)
Set user password ^{14,24}	<code>Esc X121CU↓</code>	<code>W[X121]CU </code>	<code>lpu•[X121]↓</code>	Set the user access password <code>X121</code> is 4-12 alphanumeric characters. The password is case sensitive. Special characters (spaces or symbols) are not allowed.
NOTE: A user password cannot be assigned if an administrator password does not exist.				
Clear user password ²⁴	<code>Esc•CU↓</code>	<code>W%20CU </code>	<code>lpu•↓</code>	This clears the user password only.
Read user password ²⁴	<code>Esc C U↓</code>	<code>WCU </code>	<code>X122↓</code>	
Set verbose mode ²⁴	<code>Esc X111CV↓</code>	<code>W [X111]CV </code>	<code>Vrb[X111]↓</code>	Set verbose mode.
NOTE: The processor can send out unsolicited information (such as notice of a volume or input change or a change in some other setting). That is called verbose (wordy) relationship between the processor and a connected device. For a direct RS-232/422 connection, the processor is set for Verbose mode by default. When the DVS 605 is connected via Ethernet, Verbose mode is disabled by default in order to reduce the amount of communication traffic on the network. If you want to use the Verbose mode with a processor connected via Ethernet, this mode must be set to On each time you reconnect to the processor.				
Read verbose mode	<code>Esc CV↓</code>	<code>WCV </code>	<code>X111↓</code>	
Read connection's security level	<code>Esc CK↓</code>	<code>WCK </code>	<code>X125↓</code>	
NOTE: <code>X111</code> = Verbose/response mode (Default = 0 for Telnet connections; 1 for RS-232 host control). 0 = clear/none, 1 = verbose mode, 2 = tagged responses for queries, 3 = verbose mode and tagged responses for queries. If tagged responses are enabled, all read commands return the constant string + the data, like setting the value does (for example command: Esc CN } response: lpu• x121).				
				<code>X121</code> = Password (12 characters = maximum length; no special characters are allowed)
				<code>X125</code> = Connection's security level: 0 = anonymous, 1 – 10=extended security levels 1 thru 10, 11 = user, 12 = administrator

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (host to processor)	Response (processor to host)	Additional Description
Re-map port designations				
Set Telnet port map ²⁴	Esc {port #}MT↓	W{port #}MT	Pmt{port #}↓	
Reset Telnet port map ²⁴	Esc 23MT↓	W23MT	Pm00023↓	Set Telnet to the default port (23)
Disable Telnet port map ²⁴	Esc 0MT↓	W0MT	Pm00000↓	
Read Telnet port map	Esc MT↓	WMT	{port #}↓	
Set web port map ²⁴	Esc {port #}MH↓	W{port #}MH	Pmh{port #}↓	
Reset web port map ²⁴	Esc 80MH↓	W80MH	Pmh00080↓	
Disable web port map ²⁴	Esc 0MH↓	W0MH	Pmh00000↓	
Read web port map ²⁴	Esc MH↓	WMH	{port #}↓	Set web port to default value of 80
Directory commands				
Change/create directory	Esc {path}//{directory}//C↓	W {path}//{directory}//C	Dir•{path}//{directory}//↓	
NOTE: A directory does not actually exist until a file has been copied into the path.				
Move back to root directory	Esc / C↓	W%2FC	Dir•/↓	
Move up one directory	Esc ..C↓	W%2E%2EC	Dir•{path}//{directory}//↓	
View current directory	Esc C↓	WC	{path}//{directory}//↓	
File erase commands				
Erase user-supplied file ^{24, 28}	Esc {filename} EF↓	W {filename} EF	Del • {filename}↓	
Erase current directory and its files ^{24, 28}	Esc EF↓	W%2FFF	Dfl↓	
Erase current directory and subdirectories ^{24, 28}	Esc //EF↓	W%2F%2FFF	Dfl↓	

Using the Default Web Pages

The DVS 605 features an on-board web server, displayed as a set of default web pages. These pages allow you to control and operate the DVS 605 unit via a LAN or WAN connection through the RJ-45 port, using a web browser such as the Microsoft® Internet Explorer® 8 or later, Mozilla® Firefox® 6 or later, Google Chrome™ 9 or later, Apple® Safari® 4 or later.

NOTE: If you are using Internet Explorer, compatibility mode must be turned off (see “[Turning Off Compatibility Mode](#)” on page 62 for details).

This section gives an overview of the default web pages, which are always available and cannot be erased or overwritten.

Topics that are covered, include:

- [Accessing the Default Web Pages](#)
- [Navigating the Default Web Pages](#)

Accessing the Default Web Pages

Access the DVS 605 through the on-board web server pages as follows:

1. Double-click the web browser icon on the PC desktop to launch the web browser.
2. Click in the browser **Address** field.
3. Enter the unit’s IP address in the browser **Address** field.

NOTE: If the local system administrators have not changed the value, the factory-specified default is DHCP set to OFF, IP address = 192.168.254.254.

4. Press the keyboard <Enter> key. The DVS 605 checks to see if it is password protected.
If it is not password protected, proceed to step **6**.
If it is password protected, the DVS 605 displays the Enter Network Password page.

NOTE: A user name entry (“user” or “admin”) is required.

5. Click in the **Password** field and type in the appropriate administrator or user password if prompted.
6. Click **OK**.

Turning Off Compatibility Mode

The DVS 605 default web pages do not support compatibility mode in Microsoft Internet Explorer.

To check compatibility view settings:

From the **Tools** menu of the browser, select **Compatibility View Settings**. The Compatibility View Settings dialog box opens.

Be sure that the **Display all websites in Compatibility View** check box is cleared, and that the IP address of the DVS 605 is not in the list of websites that have been added to Compatibility view.

Navigating the Default Web Pages

The DVS 605 default web pages opens with two main pages: Configuration and Hardware. Below the tabs for each page is a global navigation bar with icons for ease of navigation through the various options. The two pages have specific groups of options.



Figure 31. Default Web Pages Open on the Configuration Page

Configuration Pages

NOTE: From Hardware pages, click on the Configuration tab **Configuration**.

The Configuration pages options are:

- Input/Output Configuration
- EDID Minder
- Image Settings
- PIP Settings
- Audio Configuration
- Preset Management
- Device Settings.



Figure 32. Global Navigation Bar for the Configuration Page

The browser screen is set out as two sections. These are AV Controls on the left, and the options page on the right.

AV Controls Panel

NOTE: This panel section can be hidden or revealed by clicking on the section handle (see image at right).



The AV Controls panel is used to control AV settings such as input selection and for performing a one-time Auto-Image on an input. Video and audio mute can be turned on or off, and image freeze can be invoked.



Figure 33. AV Controls Panel

At the bottom of the panel is a summary of the current active input and output status, which includes signal format and HDCP status.

Auto-Image button

Click on this button to start a one time Auto-Image on the currently selected input.

AV input buttons (inputs 1-5)

Click on these to select an input as desired. As a new one is selected, the summary text within the panel changes to reflect the new input and output status.

Breakaway audio check box (audio models only)

Select this check box to enable audio breakaway. The input buttons separate into two columns: video and audio.

From the Video column, click the input button associated with the video to be used.

From the Audio column, click on the input button associated with the audio to be used.

NOTES: When in PIP mode, audio breakaway is not supported.

Audio follows either the main window or the PIP window (set on the Devices Settings screen).



Video only and Audio only switching (breakaway) Rules

When the current audio input is configured for digital audio:

- Digital audio is not available from any input other than the currently selected video input.
- Audio-only switching can be made to inputs that are configured for analog audio.
- Video-only switching is not possible.
- Video-only switching can only be made after an audio-only switch to an input configured for analog audio, and then can be made to any input.

When the current audio input is configured for analog audio:

- Audio-only switching is available to any other input that has audio configured as analog.
- Audio-only switching is not possible to any other input that has audio configured as digital.
- Video-only switching is possible, regardless of the audio configuration of the new input.
- When switching video-only from an input that has audio configured as analog, to an input where the audio is configured as digital, the digital audio on that new input can now be selected.

Clear the **Breakaway Audio** check box to disable the audio breakaway.

Video and audio mute buttons

Click **Video Mute** to mute only the video signal. The button turns blue.

Click **Audio Mute** to mute only the audio. The button turns red.

Click **AV Mute** to mute both video and audio simultaneously.

The button turns red and the Video and Audio mute buttons are also activated.

To unmute any signal, click on the appropriate button. The button reverts to the default color, indicating the signal has been unmuted.



Freeze button

Click **Freeze** to freeze the current video image. The button turns blue, indicating the image is frozen.

Click it again to unfreeze the image. The buttons reverts to the default color.

Input/Output Configuration Page – Input Configuration Panel

Click on this button  to open to this page.

The Input Configuration panel consists of user configurable fields for each of the five inputs. These include; input naming, signal type, aspect ratio, Auto-Image, Auto Memory, HDCP Authorized status, and film detection. There is also a visual indicator on the right side of the panel for the currently active video and audio inputs; for example in the image below input 2 is audio and Lab DVD is a video input.

Input Configuration							
Input	Signal Type	Aspect Ratio	Auto - Image	Auto Memory	HDCP Authorized	Film Detect	
Room 3	RGB Scaled	Fill	<input type="checkbox"/>	<input checked="" type="checkbox"/>	—	<input checked="" type="checkbox"/>	
Input 2	Auto Detect	Follow	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	—	<input checked="" type="checkbox"/>	
Input 3	HDMI/DVI	Fill	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Lab DVD	HDMI/DVI	Follow	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Input 5	HDMI/DVI	Fill	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

Figure 34. Input Configuration Panel

Input (renaming)

To rename an input click inside the field and type in the desired name to identify the input. Input names have a 16-character limit. By default, the name associated with an input channel is Input <number>.

NOTE: Entering a single space character resets the name of the input to the default.

Signal type

The user can select the signal type for inputs 1 and 2 from **Auto Detect**, **RGB Scaled**, **Auto YUV**, **RGBcvS**, **S-Video**, and **Composite**. For inputs 3, 4, and 5, **HDMI/DVI** is the only available signal type.

From the **Signal Type** drop-down list, select the video format associated with the input.

For inputs 1 and 2, available signal types include:

- **Auto-Detect** — With this setting selected, whenever the device detects an input format change, it automatically sets the input signal type.
- **RGB Scaled**
- **Auto YUV** — With this setting selected, the device detects if YUVi or YUVp/HDTV is applied and sets the input accordingly.
- **RGBcvS**
- **S-Video**
- **Composite**

Aspect ratio

Select **Fill** or **Follow** from the drop-down list to set the aspect ratio.

- **Fill** — The input signal is scaled to fill the entire video output.
- **Follow** — Follows the signal aspect ratio, with respect to the current output resolution setting. A black letter box or pillar box bars may be applied for aspect ratio compensation.

Auto-Image

Select the check box to apply Auto-Image to the input, if desired. When selected, Auto-Image is applied whenever there is a change in the input sync.

Auto Memory

Select the check box to enable the Auto Memory, if desired. Auto Memory recalls input and image settings for signals that have previously been applied.

When Auto Memory is disabled, the DVS 605 treats every newly applied input as a new source.

See the table in the **“Auto Memory”** section on page 24 for the Auto Memory and Auto-Image relationship.

HDCP Authorized

Select the **HDCP Authorized** check box (inputs 3-5) in order to have the input report as an HDCP Authorized device. If the box is not checked the source will be blocked from encrypting its output. This may result in some content not being passed to the output.

NOTE: The **HDCP Authorized** option is not available for analog inputs 1 and 2.

Film Detect

Select these check boxes to enable 3:2, 2:2, and 24:1 film pulldown detection for NTSC/PAL/1080i input signals.

Input/Output Configuration Page – Output Configuration Panel

The right panel consists of user configurable fields for video outputs. These include: output resolution, refresh rate, signal format and sync polarity for the analog output, and signal format for the digital output. The switch transition mode between inputs can be set, and a test pattern selection is available for use in calibrating a connected display. The genlock settings can also be set on all models.

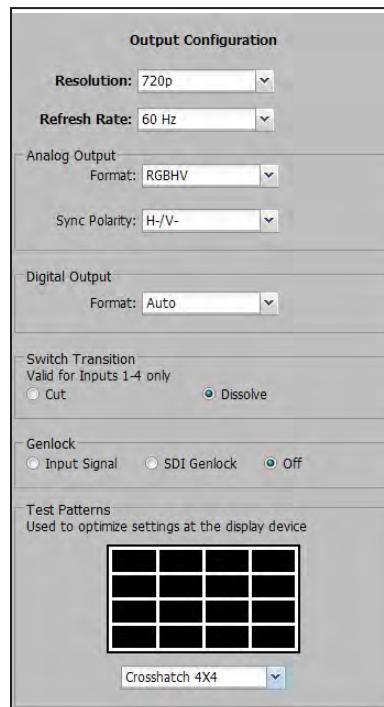


Figure 35. Input Configuration Panel

Resolution

Click on the arrow and from the drop-down list box select the applicable output resolution. The selectable resolutions include five user customizable ones: C1-C5.

See the [resolution and refresh rate table](#) on page 18 for a full list.

Default is 720p/60 Hz

Refresh rate

Click on the arrow and from the drop-down list box select the applicable refresh rate.

Analog signal format

Click on the arrow and from the drop-down list box select an applicable signal format. Selectable formats are: RGBHV (default), RGBS, RGBcvS, (Y, R-Y,B-Y bi-level), and (Y, R-Y,B-Y tri-level).

Analog sync polarity

Click on the arrow and from the drop-down list box select the applicable sync polarity, Choices are: H-/V- (default), H+/V-, H+/V+, H-/V+.

NOTE: The sync polarity option is only available when the output format is RGBHV.

Digital output signal format

Click on the arrow and from the drop-down list box select an applicable signal format. Selectable formats are: Auto (based on sink/display EDID), DVI, HDMI RGB, HDMI YUV 444 Full, HDMI YUV 444 Limited, HDMI YUV 422 Full, HDMI YUV 422 Limited.

Switch transition

Select either mode, cut or dissolve, to set the transition effect when switching inputs.

Genlock

Where applicable, SDI genlock or input signal genlock can be applied, or genlock can be turned off. Select as desired.

See “[Genlock/AFL Mode](#)” on page 20 for details.

NOTE: The SDI genlock option is available only on DVS 605 D and DVS 605 AD models.

Test pattern

To aid display device setup and optimization, select a test pattern from the drop-down list.

See “[Test Pattern](#)” on page 25 for details.

NOTE: No input signal is needed when using a test pattern for display device setup.

EDID Minder Page

Extron EDID Minder is an EDID management process that automatically manages the EDID information between a digital display device and one or more input sources.

Click on this button  to open the EDID Minder page.

From this page an EDID data set can be assigned to any input with an Auto-Detect, an RGB, or an HDMI/DVI input type. The currently assigned EDID properties can be viewed and EDID files can be loaded to and from the DVS 605.

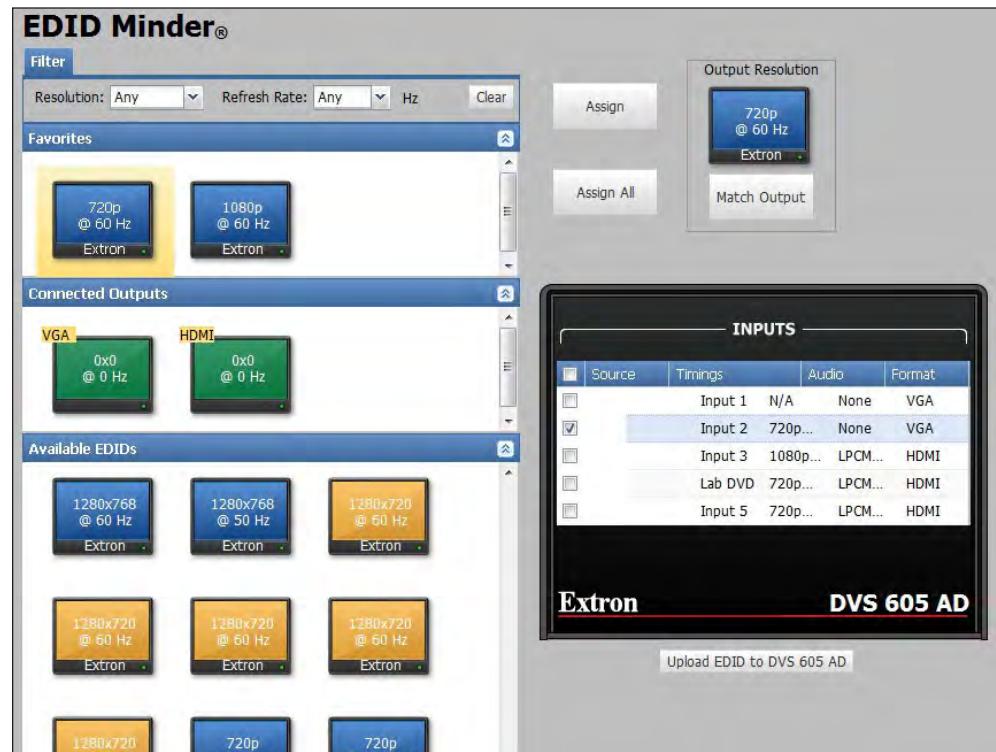


Figure 36. EDID Minder Page

The EDID Minder screen displays a table of EDID settings and connected output devices, grouped as favorites, connected outputs, and available EDIDs. These are visually shown as colored output display icons: factory default EDIDs are blue, connected output devices are green, and custom loaded or saved EDIDs are yellow (see figure above).

The EDID properties currently assigned to each input are displayed in the table of inputs. Audio and video formats for each input are also displayed. The audio input format listed in an input's EDID is determined by the Audio Input Format on the Audio Configuration page. Video input format is configured on the Input/Output Configuration page.

Assigning EDIDs

To assign EDID to selected inputs:

1. From the inputs screen (table of inputs) on the right, select the desired input or inputs (see figure below).
2. From the table on the left of the screen, select an available EDID (represented by a blue, green, or yellow output display icon).
3. Click the **Assign** button to assign EDID to the selected input or inputs.



Figure 37. Assigning EDIDs

NOTE: If you do not assign any inputs but still click **Assign**, an error message is displayed.

To assign EDID to all inputs:

1. From the EDID table, select an available EDID (represented by a blue, green, or yellow output display icon).
2. Click the **Assign All** button.

NOTE: If you select **Assign All**, all input boxes, checked or unchecked, will be ignored and the EDID will be assigned to all inputs.

To match the selected inputs to the current output resolution:

1. From the inputs table on the right, select the desired input or inputs (see figure above).
2. In the Output Resolution section (upper right of screen), click **Match Output**.

Image Settings Page

From this page signal sampling and picture control settings can be set, user and input presets can be saved and recalled, and overscan settings can be applied.

Click on this button  to open the Image Settings page.

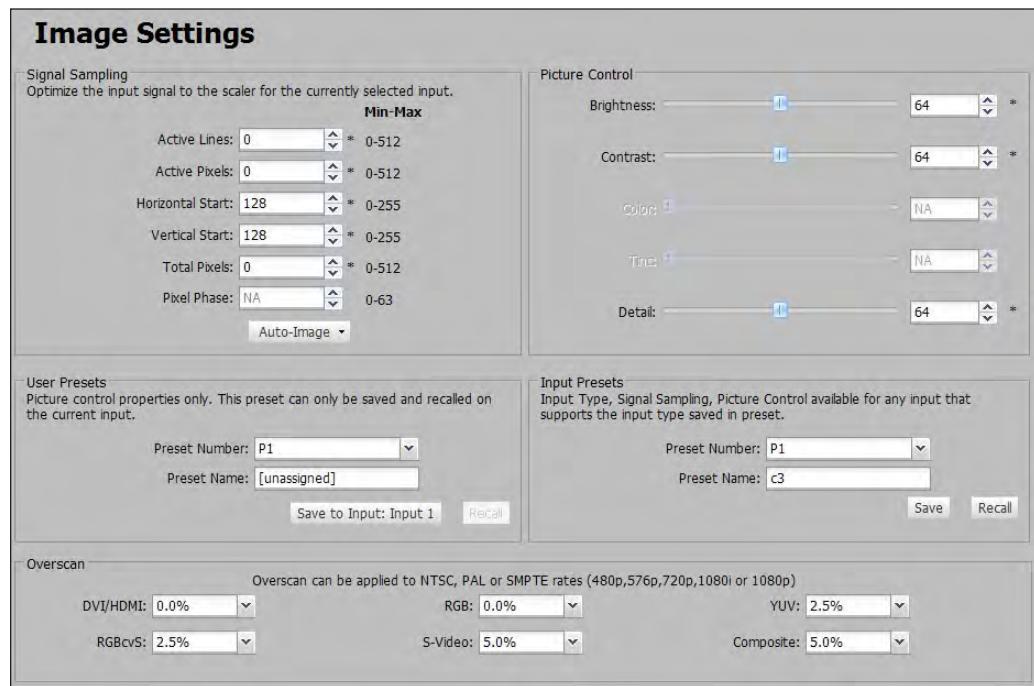


Figure 38. Image Settings Page

Signal Sampling

In this section settings for the currently selected input signal can be adjusted. Adjustable fields are: the number of active lines, active pixels, total pixels, horizontal and vertical start settings, and the pixel phase. In addition an Auto-Image (with Fill or Follow modes) can be executed on the input.

In the Signal Sampling section, adjust an input signal setting by entering a value or clicking the up ▲ and down ▼ arrows in the field associated with the setting. An asterisk beside a chosen value for a signal sampling setting indicates that it is a default value for the applied input signal.

An Auto-Image can also be executed on the current input. Auto-Image automatically sizes and centers the selected input. If an unknown input is connected to the device, the processor measures and estimates the resolution of the incoming video.

To perform an Auto-Image:

1. Click on the **Auto-Image** button. A drop-down list opens.
2. Select **Auto-Image**: with fill (to fill the entire video output) or **Auto-Image**: with follow (to maintain the aspect ratio of the input).

See “**Auto-Image**” in the “Input Configuration” section on page 66 for steps to set automatic activation.

Picture Control

This section shows the image settings for the selected input. These include brightness, contrast, color, tint, and detail, which can be adjusted and applied to that input.

To adjust the picture settings click and drag the associated slider for any image setting (brightness, contrast, color, tint, or detail) to the desired value.

Alternatively, you can enter a value within the field associated with the image setting, or click the up ▲ and down ▼ arrows and change the value in the field.

User Presets

In this section of the Image Settings page, the user can save or recall up to 16 user presets per input channel for the currently active input. The user presets contain only picture control properties.

Settings Included Within Presets				
Setting	User Preset	Input Preset	PIP Preset	Auto Memory
H/V Start		Yes		Yes
Active Pixels		Yes		Yes
Active Lines		Yes		Yes
Total Pixels		Yes		Yes
Phase		Yes		Yes
Brightness and Contrast	Yes	Yes		Yes
Color and Tint	Yes	Yes		Yes
Detail	Yes	Yes		Yes
Input Type		Yes		
Audio Input Gain and Attenuation		Yes		
Main Image/Window Size and Position	Yes	Yes	Yes	Yes
PIP Image/Window Size and Position			Yes	
Preset Name	Yes	Yes	Yes	
Main Input			Yes*	
PIP Input			Yes*	
Film Mode		Yes		
Presets Available	16 per input channel	128 global	16 global	32 per input channel
Recall location	Current input	Any input supporting the input type saved in the preset	Any input except input 5	Automatically recalled based on signal

* PIP presets can be recalled with or without the main and PIP inputs that were active when the preset was saved.

NOTE: “H/V Start” indicates the horizontal and vertical start.

Figure 39. Presets Settings

Input Presets

A total of 128 global input presets are available for the DVS 605. An input preset is a user-defined set of input and picture control settings that can be saved for each source within a system so that they can be recalled whenever the source is applied. Input presets are unique to the signal that was applied when the preset was initially saved. This type of preset saves specific settings for size, position, contrast, brightness, color and tint (if applicable), detail, and input configuration.

NOTE: An input preset can be recalled on any input supporting the input type that was active when the preset was saved. However, input presets only apply to the input resolution that was present when the preset was saved.

To create and save an input preset:

1. Adjust the signal sampling, picture control, and size settings (see the “[Size and Position](#)” section on page 75) as desired.
2. From the **Preset Number** drop-down list select a preset number.
3. In the **Preset Name** field, enter a name for the preset.
4. Click **Save**. If an input preset already exists in this location, a confirmation dialog box opens. In the dialog box, click **Yes** to overwrite the previous input preset.

The settings are saved to the selected preset location to be recalled at a later time.

See the “[Preset Management Page](#)” section on page 79 for information about renaming input presets.

To recall an input preset:

1. From the **Preset Number** drop-down list, select the preset to recall.
2. Click **Recall**. A confirmation dialog box opens.

NOTE: If an unassigned preset is selected, the **Recall** button is disabled.

3. In the dialog box, click **Yes**.

NOTE: Recalling a preset overwrites any adjustments to the settings of the current input. An input preset can also be recalled through the Preset Management screen.

See the “[Preset Management Page](#)” section on page 79 for the procedure to delete an input preset.

Overscan

This mode zooms and crops SMPTE inputs to mask edge effects and ancillary data common in broadcast signals. Issuing an Auto-Image with overscan enabled, runs an Auto Phase routine (YUV and RGB only) and centers and sizes the input according to table values.

NOTE: Overscan is applied only to SMPTE input rates (NTSC, PAL, 480p, 576p, 720p, 1080i, or 1080p).

To set the overscan, select a percentage (0.0%, 2.5%, or 5.0%) from the drop-down list that is associated with the desired input signal type.

PIP Settings Page

In PIP mode, the DVS 605 can display two images on the screen simultaneously. From this page the PIP settings can be adjusted. This includes input selection, swapping between the main and PIP inputs, adjustment of the picture control settings, main and PIP window position and sizing, and the saving and recalling of PIP presets.

NOTE: When in PIP mode, audio breakaway is not supported. Audio follows either the main window or the PIP window (set on the Device Settings screen).

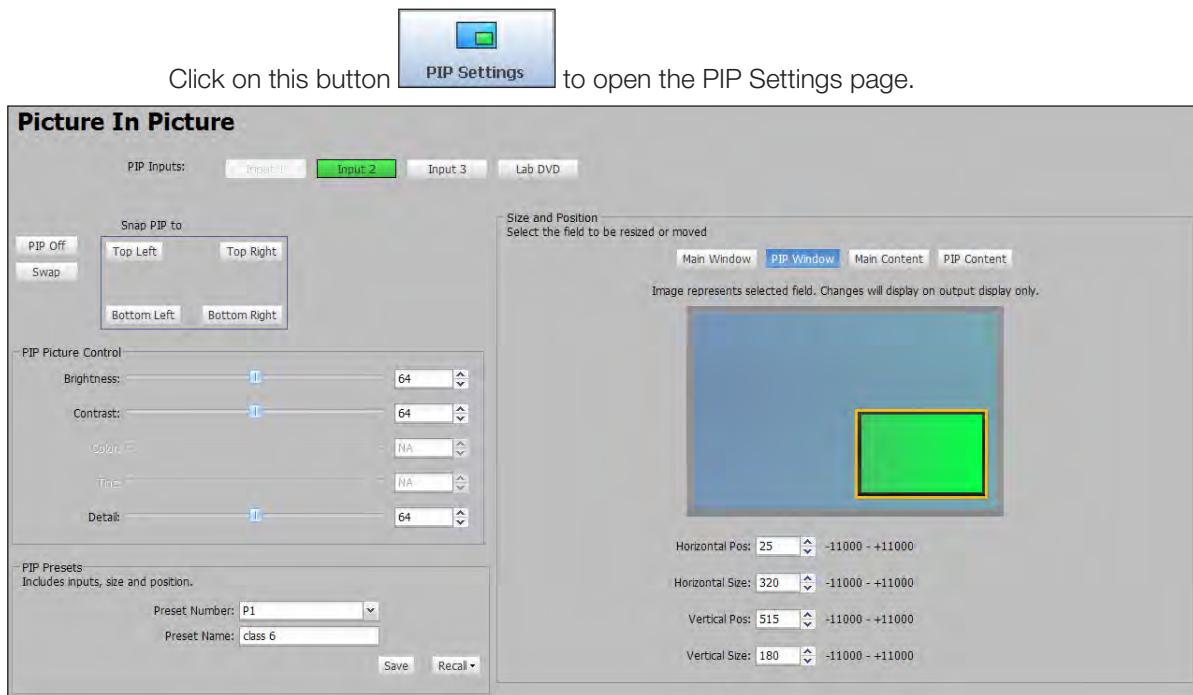


Figure 40. PIP Settings Page

PIP input selection

Inputs 1 through 4 can be selected as a PIP input. Click the button of an available input. The content of this input displays in the PIP window.

NOTES:

- The currently selected AV input is disabled in the list of available PIP inputs as the main input and PIP input cannot be the same.
- Input 5 cannot be selected as an input for PIP mode.
- The **PIP Off** and **Swap** buttons are disabled if PIP mode is not enabled.

To turn off the PIP feature simply click the **PIP Off** button.

To swap the active main window with the current PIP input, click the **Swap** button.

Snap PIP to

To snap (align) the PIP window to a corner of the main window, click **Top Left**, **Top Right**, **Bottom Left**, or **Bottom Right** within the Snap PIP display grid. This places the PIP window in the specified corner of the main window. When using the Snap To feature, the PIP window is always 25 pixels away from the edges of the output raster.

PIP picture controls

These PIP input settings include brightness, contrast, color, tint, and detail.

NOTES:

- Picture controls will not be applied if there is no input signal. Any changes made while there is no input signal will be lost when a signal is detected.
- After PIP is disabled, the configured PIP picture settings will still apply to the specified input.

To adjust PIP picture settings (brightness, contrast, color, tint, or detail), click and drag the associated slider to the desired value.

Alternatively, you can enter a value in the field associated with the picture setting, or click the up ▲ and down ▼ arrows.

Size and Position

In this section the size and position of the PIP windows and content, and the main windows and content can be adjusted. The settings can be saved in a PIP preset.

NOTE: Size and position settings of the PIP window, PIP content, main window, and main content are disabled if you are configuring the DVS 605 offline.

The position and size of the content or window can be adjusted using the values in the **Horizontal Position**, **Horizontal Size**, **Vertical Position**, and **Vertical Size** fields.

To adjust the position and size numerically:

1. In the Size and Position section, click the tab for the window (**Main Window** or **PIP Window**) or content (**Main Content** or **PIP Content**) that is to be adjusted.
2. Adjust the size by entering a value or clicking the up ▲ and down ▼ arrows in the **Horizontal Size** and **Vertical Size** fields.
3. Adjust the position by entering a value or clicking the up ▲ and down ▼ arrows in the **Horizontal Pos** and **Vertical Pos** fields.

NOTE: In steps 2 or 3, if a value above or below the accepted range is entered, a red border is displayed and a pop-up window indicates the accepted minimum or maximum value.

PIP presets

Sixteen global PIP presets are available for the DVS 605. A PIP preset contains settings for the size and position of PIP. It also contains the main and PIP inputs that were active when the preset was saved. By default the first ten PIP presets have settings already associated with them, but they can be overwritten.

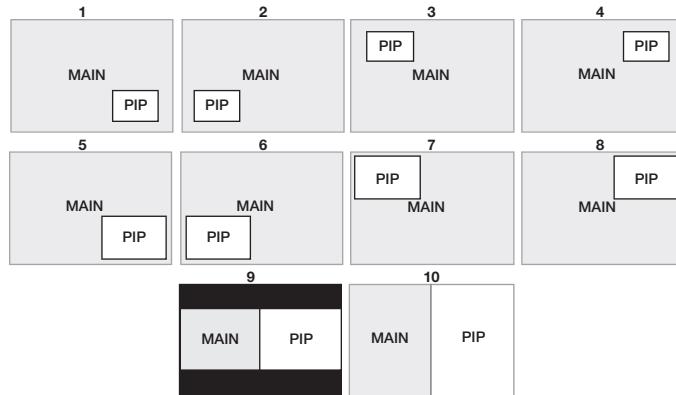


Figure 41. PIP Preset Default Window Locations

To create and save a PIP preset:

1. Click the button of an available input (1 - 4) to use as the PIP input.
2. Adjust the picture, size, and position settings as desired for the main and PIP windows.
3. From the **Preset Number** drop-down list in the PIP Presets section, select a number.
4. In the **Preset Name** field, enter a name for the PIP preset.

NOTE: PIP preset names have a 16-character limit.

5. Click **Save**.
6. Click **Yes** to overwrite the previous PIP preset.

The settings are saved to the PIP preset location to be recalled at a later time.

To recall a PIP preset:

1. From the **Preset Number** drop-down list select the preset to recall.
2. Click **Recall** to open a drop-down list from which to select **either**:
 - a. **Recall: Input, Size & Position** (recalls main and PIP inputs as well as size and position settings of main and PIP windows), or;
 - b. **Recall: Size & Position Only** (recalls only size and position settings of main and PIP windows).

A confirmation dialog box opens.

3. In the dialog box, click **Yes**.

NOTE: Recalling a preset overwrites any adjustments to the current PIP settings.

Audio Settings Page

Using this page each of the audio inputs can be configured, including setting the input format and the gain (for analog inputs). Also the audio output format can be set and adjusted.

NOTE: Audio inputs 1 and 2 are disabled for DVS 605 and DVS 605 D models. They do not support analog audio. Input gain cannot be adjusted for digital audio.

Click on this button  to open the Audio Config page.

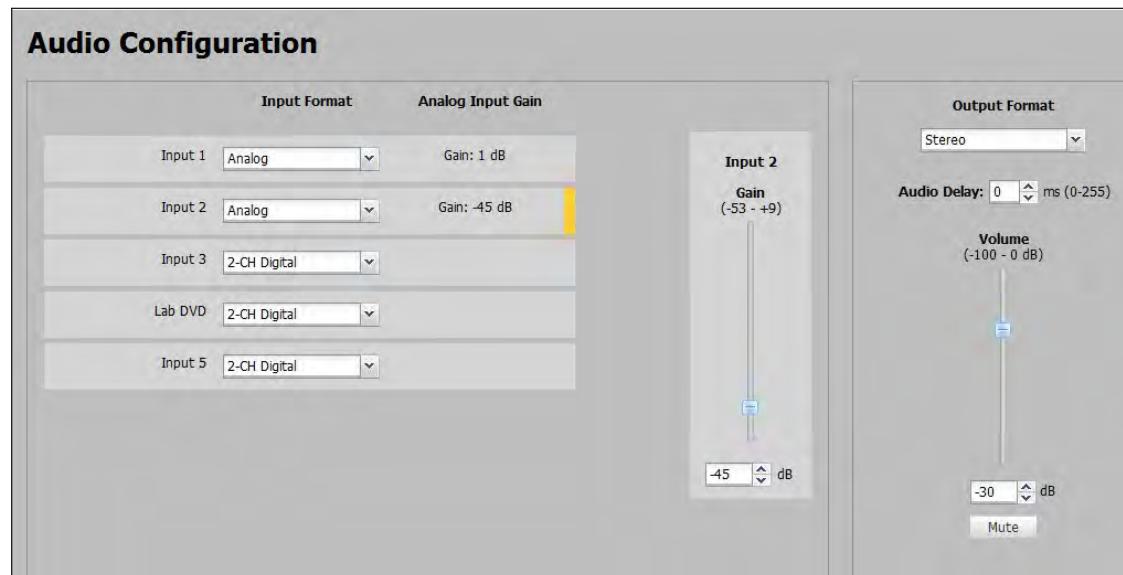


Figure 42. Audio Config Page

To configure audio inputs:

1. From the **Input Format** drop-down list, select the format associated with the input.

For inputs 1 and 2, available formats include:

- **None**
- **Analog** (audio models only)

For inputs 3, 4, and 5, available formats include:

- **None**
- **Analog** (audio models only)
- **2-CH Digital**
- **Full Digital**
- **2-CH - Auto** (audio models only)
- **Full - Auto** (audio models only)

NOTE: Auto modes use digital audio when it is present. When digital audio is not present the unit defaults to analog audio.

2. Click and drag the handle of the **Gain** slider, or click the up ▲ and down ▼ arrows in the field below the slider, or enter a value in the field.

NOTE: You can only adjust the gain and attenuation for an input that is in analog or Auto format. Gain only affects analog inputs

To configure audio output format:

1. From the **Output Format** drop-down list, select the format of the audio output. Available formats include:
 - **Dual Mono**
 - **Stereo**
2. Set the audio delay by clicking the up ▲ and down ▼ arrows or entering a value into the **Audio Delay** field. Audio delay can be set from 0 ms to 255 ms.

NOTE: The DVS 605 automatically delays audio signals to compensate for internal video processing

3. Click and drag the handle of the **Volume** slider, or click the up ▲ and down ▼ arrows, or enter a value in the field to adjust the audio output volume.

To mute the output audio, click the **Mute** button below the volume slider. The **Mute** button turns red.

Preset Management Page

This Preset Management page gives access to assigned input presets, user presets, and PIP presets. Each preset can be renamed, recalled or cleared. A brief description of the settings contained within each preset type is given at the top of each list.



Click on this button to open the Audio Config page.

The screenshot shows the Preset Management page with three main sections:

- Input Preset:** Contains signal type, signal sampling, and picture control properties. This preset may be recalled on any input that supports the saved signal type. It shows a table with one entry: Number 1, Input Preset Name c3. Buttons: Recall, Rename, Clear.
- User Preset:** Contains picture control properties only. These presets are saved and recalled on the same input. There are 16 presets per input channel. It shows a table with the message "No Presets Defined". Buttons: Recall, Rename, Clear.
- PIP Preset:** Contains selected inputs, window/image sizing and centering as a percentage of the current output resolution. Recall with or without the selected inputs. It shows a table with 16 entries from 1 to 16, each labeled "PIP PRESET" followed by a number. Buttons: Recall, Rename, Clear.

Figure 43. Preset Management Page

NOTE: The column order for the listed presets can be changed. For example, the preset name can be displayed to the left of the preset number.

To change column order, click on a column title and drag and drop it to the left or right of the other column as desired.

To recall a preset:

1. Select the input preset, user preset, or PIP preset that is to be recalled.
2. Click the **Recall** button located in the same section of the screen.

When clicking **Recall** in the PIP Preset section, a drop-down list opens. Select either:

- a. **Recall: Inputs, Size & Position**, or
- b. **Recall: Size & Position Only**

3. In the dialog box, click **Yes**.

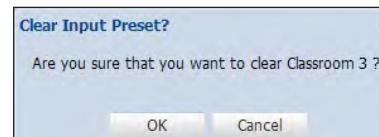
To rename a preset:

1. Select the input preset, user preset, or PIP preset that is to be renamed.
2. Click **Rename**. The cursor moves into the **Name** field.
3. In the **Name** field, enter a unique name for the selected preset.
4. Press **<Enter>** on the keyboard and the preset name is saved.

To clear a Preset:

1. Select the input preset, user preset, or PIP preset that is to be cleared.
2. Click the **Clear** button located in the same section of the screen. A confirmation dialog box opens.
3. Click **OK**. If the preset is an input preset or a user preset, the preset is removed entirely from the list. If the preset is a PIP preset, it is restored to factory default.

A dialog box opens confirming input clearance.



NOTE: A PIP preset cannot be cleared (deleted). It is restored to factory defaults.

Device Settings Page

This page allows you to configure the device settings associated with audio follow, IR control, HDCP notification, screen saver settings, and input auto switch enabling.

Click on this button  to open the Device Settings page.

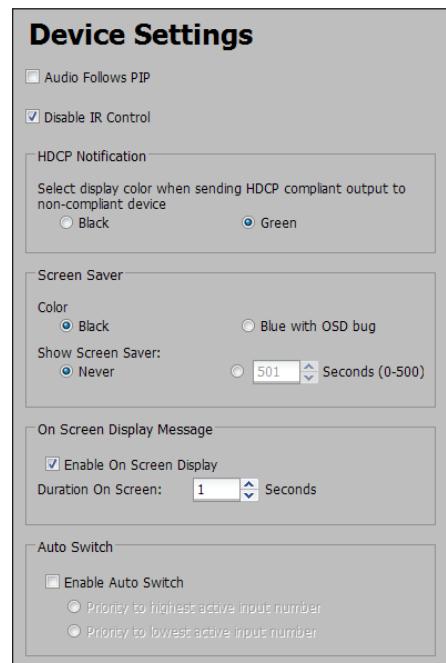


Figure 44. Device Settings Page

To set audio to follow the PIP input, select the **Audio Follows PIP** check box.

To set audio to follow the main input, clear the **Audio Follows PIP** check box.

To disable IR control, select the **Disable IR Control** check box.

To re-enable IR control, clear the **Disable IR Control** check box.

HDCP Notification

HDCP notification indicates if HDCP content restrictions are preventing a video signal from passing to the output.

When the **Green** option is selected, a green screen with HDCP CONTENT text is displayed on the output if the connected display device is not HDCP compliant and an HDCP encrypted input has been selected.

When the **Black** option is selected, the output mutes to black if the connected display device is not HDCP compliant and an HDCP encrypted input has been selected. .

To select the display color select the **Black** radio button or **Green** radio button.

Screen Saver Settings

When no active video is detected on the selected input, the screen saver mode is activated. The output sync can be disabled after a user-set duration, which allows display devices to go into a low power, standby state.

To set the screen saver options:

1. Click the **Black** (default) or the **Blue with OSD bug** radio buttons to enable the desired screen saver background color.
 - **Black** — Mutes the video output to black for a set duration before disabling the output sync.
 - **Blue with OSD bug** — Displays a blue background with a moving OSD bug that indicates "DVS 605: Input X No Signal" for a set duration before disabling the output sync.
2. Adjust the duration of the screen saver to either:
 - a. No screen saver (never disable output sync), by clicking the **Never** radio button; or
 - b. To a user-defined duration (1-500 seconds), by clicking the radio button for the duration field and then click the up ▲ and down ▼ arrows. Alternatively enter a value in this field.

NOTE: Setting this value to 0 disables the output sync immediately when no active input is detected.

On Screen Display Message

When the selected On Screen Display message shows the name of the current input and the detected input signal. The message is displayed for a user-defined duration (1-501 seconds) after an input switch.

To set the On Screen Display to display messages:

1. Select the **Enable On Screen Display** check box.
2. Adjust the duration that messages are displayed on screen, click the up ▲ and down ▼ arrows, or enter a value in the **Duration on Screen** field.

NOTE: Setting this value to zero disables the On Screen Display Message.

To disable the On Screen Display message, clear the **Enable On Screen Display** check box or set the duration to zero.

Auto Switch

When enabled, the auto-input switching priority can be set to either start with the highest active input or the lowest active input. See “[Auto-switching between inputs](#)” on page 3 for details.

To enable auto-input switching:

- 1.** Select the **Enable Auto Switch** check box.
- 2.** Select the desired priority option radio button. Either:
 - a.** Priority to highest active input number, or
 - b.** Priority to lowest active input number.

To disable the auto-input switching option clear the **Enable Auto Switch** check box.

Hardware Pages

Click on the Hardware tab **Hardware** to open these pages.

The Hardware pages options are:

- Unit Information
- Device Name
- Connection
- Firmware Loader
- Exec/Power Mode
- Date and Time
- Password
- Reset Device

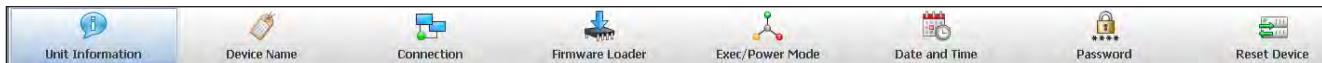


Figure 45. Global Navigation Bar for the Hardware Page

Unit Information Page

This page gives a non-configurable view of information about the connected unit. These include part number, model name and description, firmware version and build number, and the current internal temperature (in degrees F/C) of the connected device. In addition, the page gives access to third party licensing information.

Click on this button to open the page.

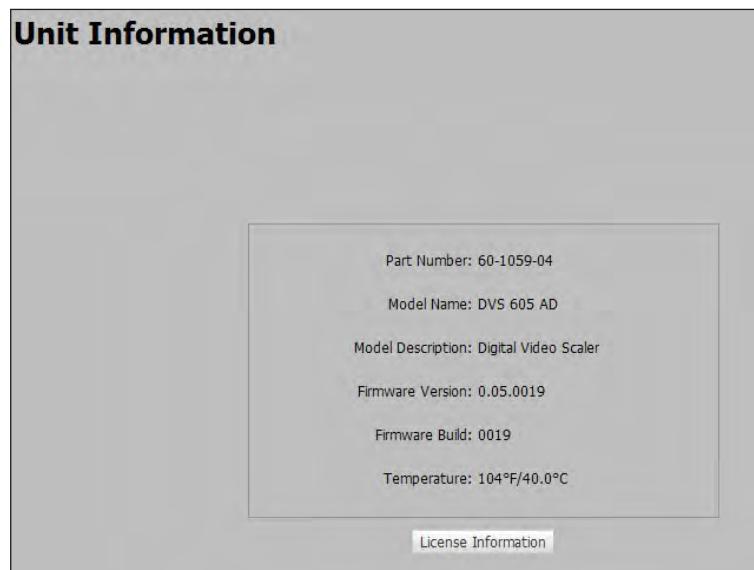


Figure 46. Unit Information Page

To view details about third-party packages and associated licensing, click the **License Information** button. The DVS 605 License Information dialog box (shown at right) opens.

To view a copy of a listed package license, click the link in the License column for the relevant package. This opens in a separate window a copy of the package license.

Click **Close** to close the License Information dialog box.

See **Licensed Third-party Software Used in the DVS 605** on page 2 for a list of the software used.



Device Name Page

This page allows the user to assign or change the connected device name.

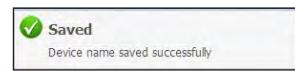
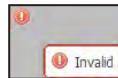
Click on this button  to open the page.



Figure 47. Device Name Page

To assign or change the name:

1. Enter a name for the device in the name field. This may be up to 24 alphanumeric characters in length with no spaces between characters. If an invalid name is entered, a red symbol appears to the right of the name field.
2. Click **Save**. If valid a confirmation box appears



To reset the name of the device, click **Reset** in the dialog box. A name must be entered, the name field cannot be left blank.

Connection Settings Page

This page allows the user to adjust device settings for RS-232 and Ethernet connections.

Click on this button  to open the page.

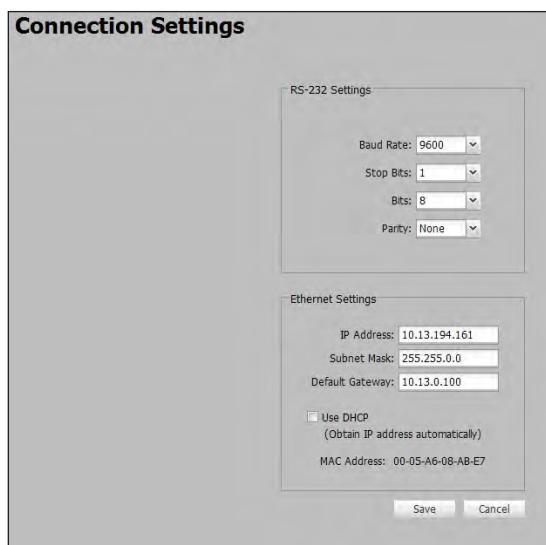


Figure 48. Connection Settings Page

RS-232 Settings

To configure the RS-232 settings:

1. From the **Baud Rate** drop-down list, select the appropriate baud rate.
2. From the **Stop Bits** drop-down list, select the number of bits used to indicate a byte.
3. From the **Bits** drop-down list, select the number of data bits to transmit.
4. From the **Parity** drop-down list, select the parity checking type.
5. Click **Save**

Ethernet Settings

NOTE: The default setting is DHCP set to OFF, IP address = 192.168.254.254.

To configure the Ethernet settings for use with DHCP:

1. In the Ethernet Settings section, select the **Use DHCP** check box.
2. Click **Save**. Depending on your IT administrator, an IP address is automatically assigned to the device.

To configure the Ethernet settings with a static IP address:

1. In the **IP Address** field, enter an IP address for the device.
2. In the **Subnet Mask** field, enter the subnet mask for the device.
3. In the **Default Gateway** field, enter the default gateway to be used.
4. Click **Save**.

Firmware Loader Page

This page allows the user to update the device firmware.

Click on this button  to open the page.

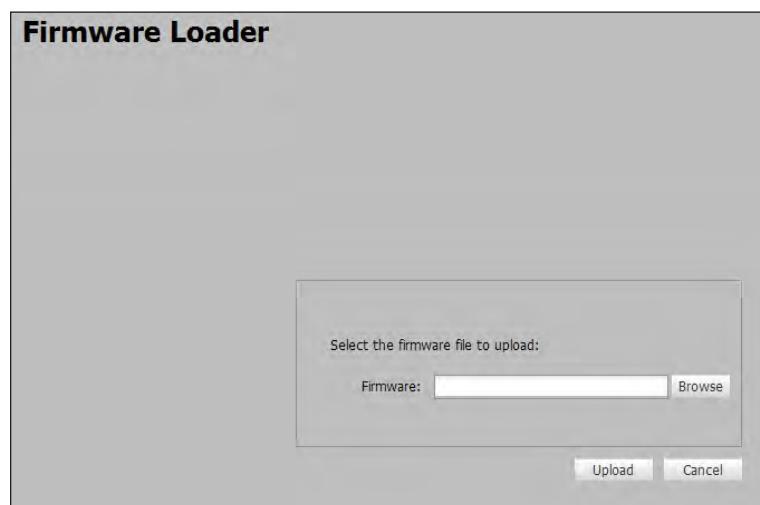


Figure 49. Firmware Loader Page

To update the device firmware:

1. Click **Browse**. The Choose File to Upload dialog box opens.
2. Browse to and select the firmware file to upload to the device. Valid firmware files have an EFF or ESF extension.
3. Click **Open**. This closes the dialog box and returns you to the Firmware Loader screen.
4. Click **Upload**. An indicator displays the status and completion of the upload. The device reboots after upload is complete. After upload is complete, the device restarts.

NOTE: Current firmware updates can be downloaded from the Firmware Download Center page of the Extron website. This file downloads onto your PC

Executive/Power Mode Page

This page allows the user to set the executive mode and power mode for the device. The video and sync can also be muted so the connected displays can go into a standby state.

Click on this button  to open the page.

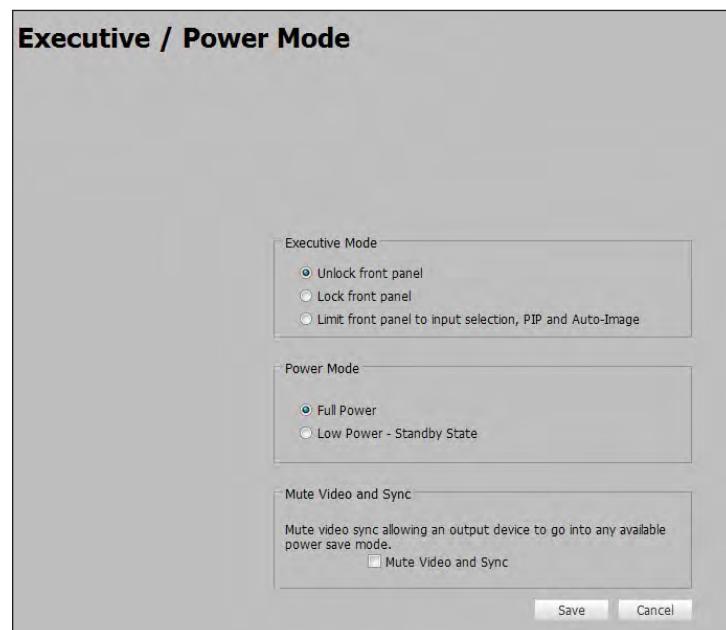


Figure 50. Executive/Power Mode Page

Executive Mode

Executive mode locks the front panel functions of the DVS 605, and there are three executive mode options available:

- Unlock front panel (default)
- Lock front panel
- Limit front panel to input selection, PIP, and Auto-Image

To set executive mode:

1. Click the radio button for the desired lockout option.
2. Click **Save**.

Power Mode

The low power-standby state disables all video input processing and all video outputs to save energy when the DVS 605 is not in use.

To set the power mode:

1. Click the radio button for the desired power mode (**Full Power** or **Low Power - Standby State**).
2. Click **Save**.

Mute Video and Sync

Muting the video and sync allows connected displays to go into a standby state.

To mute the video and sync:

1. Select the **Mute Video and Sync** check box.
2. Click **Save**.

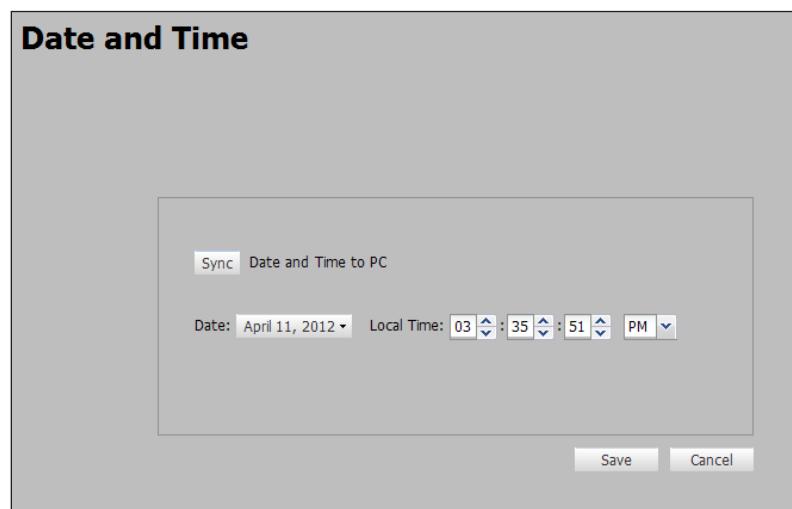
To unmute the video and sync:

1. Clear the **Mute Video and Sync** check box.
2. Click **Save**.

Date and Time Page

This page allows the user to set the date and time for the device.

Click on this button  to open the page.



The screenshot shows the 'Date and Time' configuration page. At the top, the title 'Date and Time' is displayed. Below it is a 'Sync' button with the label 'Date and Time to PC'. Underneath is a date dropdown set to 'April 11, 2012' and a time input field showing '03:35:51 PM'. At the bottom of the page are 'Save' and 'Cancel' buttons.

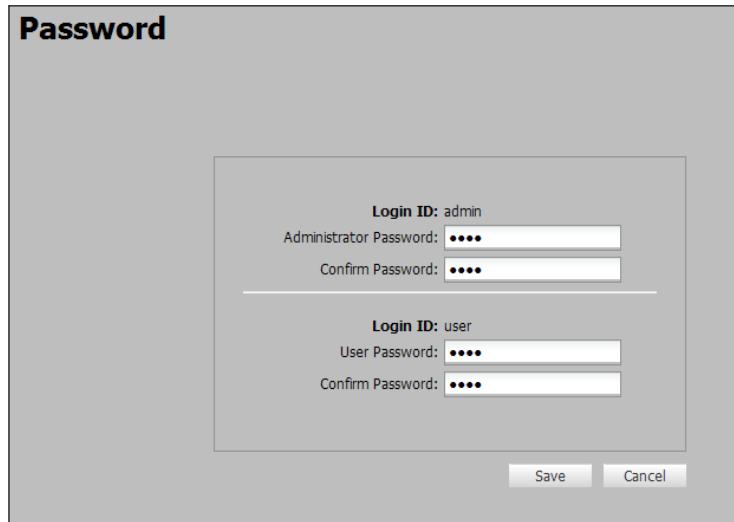
Figure 51. Date and Time Page

To set the date and time either click the **Sync** button to sync the device date and time to that of the connected PC, or manually adjust the date and time using the Date drop-down calendar and the Time fields. Click **Save** when done.

Password Page

This page allows the user to set an administrator and user password on the device.

Click on this button  to open the page.



The screenshot shows a 'Password' page with two sections. The top section is for the administrator, labeled 'Login ID: admin'. It has fields for 'Administrator Password' and 'Confirm Password', both containing four dots. The bottom section is for a user, labeled 'Login ID: user'. It also has fields for 'User Password' and 'Confirm Password', both containing four dots. At the bottom of the page are 'Save' and 'Cancel' buttons.

Figure 52. Password Page

Administrators and users can view any setting on the device. Administrators have the ability to make adjustments to any setting. Users can only make changes to the following:

- Input Selection
- PIP Preset Recall
- Auto-Image
- PIP On/Off
- User Preset Recall
- Auto + Fill
- Auto + Follow
- PIP Swap
- Input Preset Recall
- Aspect Ratio
- Volume
- Audio Mute
- Freeze
- Video Mute

NOTE: If the DVS 605 is password-protected, a user name entry is required for connection. Enter **admin** for administrator-level access or **user** for user-level access. These user names must be entered in lowercase characters. After entering the appropriate user name, enter the associated password in the Password field.

To create or change an administrator password:

1. In the **Administrator Password** field, enter the desired administrator password.
2. In the **Confirm Password** field, re-enter the administrator password.
3. Click **Save**.

To create the user password:

NOTE: User password cannot be set until an administrator password has been entered.

1. In the **User Password** field, enter the desired user password.
2. In the **Confirm Password** field, re-enter the user password.
3. Click **Save**.

NOTE: When passwords are set, a notification to close and restart the browser appears.

Reset Device Page

This page allows the user to reset the device.

Click on this button



to open the page.

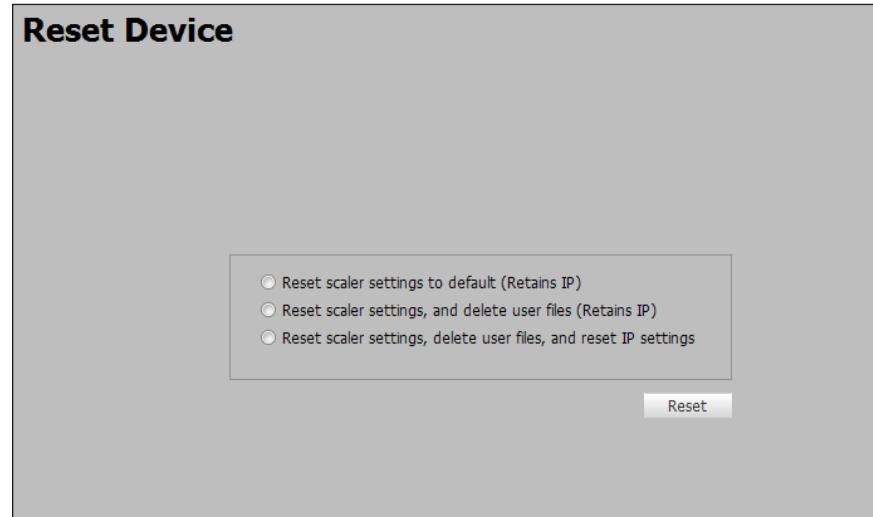


Figure 53. Reset Device Page

There are three reset options available:

- Reset scaler settings to default (Retains IP)
- Reset scaler settings, and delete user files (Retains IP)
- Reset scaler settings, delete user files, and reset IP settings

Depending on the selected reset option, different settings are cleared.

Reset scaler settings to default (Retains IP) — Resets the settings associated with input settings, the output image, EDID, PIP, and audio, and also includes presets and auto memories, except Ethernet settings.

NOTE: Ethernet settings include the IP address, subnet mask, gateway IP address, device name, DHCP setting, and port mapping.

Reset scaler settings, and delete user files (Retains IP) — Resets all settings on the device to factory defaults (deletes user files), except the Ethernet settings.

Reset scaler settings, delete user files, and reset IP settings — Resets all settings on the device to factory defaults (deletes user files) including the Ethernet settings. Ethernet settings will default to DHCP set to Off, IP address = 192.168.254.254.

To reset the device:

1. Click the radio button of the desired reset option.
2. Click **Reset**. A confirmation dialog box opens.
3. In the dialog box, click **Yes** to continue with the reset, or **No** to abort the reset.



Mounting

This section describes:

- **Tabletop Mounting**
- **Rack Mounting**
- **Furniture Mounting**

Mounting the DVS 605

If the DVS 605 is to be rack mounted, it is important to mount it before cabling it. Four rubber feet are included with the unit. Install the feet only if the unit is to be mounted on a tabletop (see “Tabletop Placement” below).

Tabletop Placement

For tabletop placement, install the self-adhesive rubber feet or pads (provided) onto the four corners of the bottom of the device.

UL Guidelines for Rack Mounted Devices

The following Underwriters Laboratories (UL) guidelines pertain to the safe installation of the device in a rack.

1. **Elevated operating ambient temperature** — If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, install the device in an environment compatible with the maximum ambient temperature ($T_{ma} = +122^{\circ}\text{F}, +50^{\circ}\text{C}$) specified by Extron.
2. **Reduced air flow** — Install the equipment in a rack so that the amount of air flow required for safe operation of the equipment is not compromised.
3. **Mechanical loading** — Mount the equipment in the rack so that a hazardous condition is not achieved due to uneven mechanical loading.
4. **Circuit overloading** — Connect the equipment to the supply circuit and consider the effect that circuit overloading might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
5. **Reliable earthing (grounding)** — Maintain reliable grounding of rack-mounted equipment. Pay particular attention to supply connections other than direct connections to the branch circuit (such as use of power strips).

Rack Mounting

To rack mount the DVS 605, turn off or disconnect all equipment power sources and rack mount the DVS 605 unit using the pre-installed brackets (see figure below).

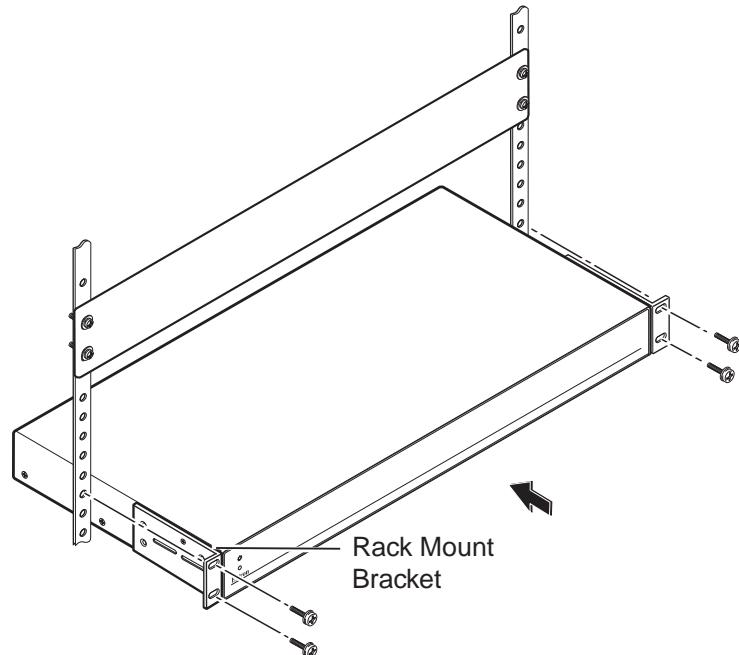


Figure 54. Rack Mounting the DVS 605

Furniture Mounting

Optional furniture mounting brackets (MBU 149) can be used to mount the unit under a table or desk top (see figure below).

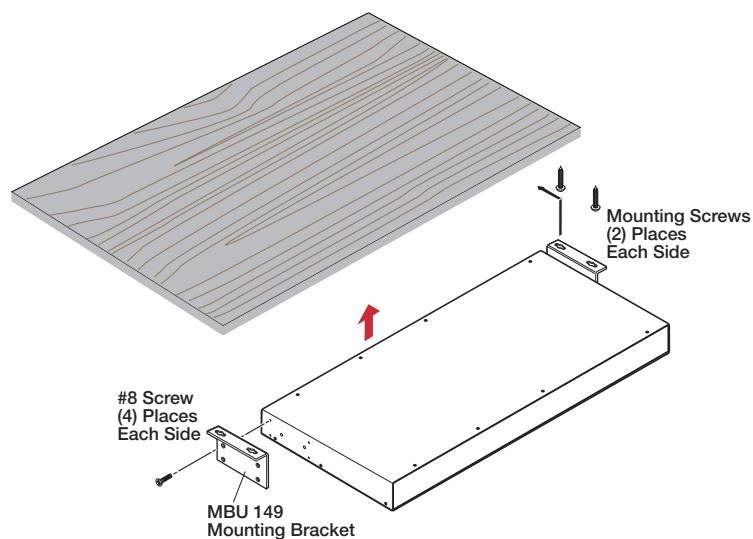


Figure 55. Furniture Mounting the DVS 605

Extron Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

USA, Canada, South America, and Central America:

Extron Electronics
1230 South Lewis Street
Anaheim, CA 92805
U.S.A.

Europe and Africa:

Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

Asia:

Extron Asia Pte Ltd
135 Joo Seng Road, #04-01
PM Industrial Bldg.
Singapore 368363

Japan:

Extron Electronics, Japan
Kyodo Building, 16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

China:

Extron China
686 Ronghua Road
Songjiang District
Shanghai 201611
China

Middle East:

Extron Middle East
Dubai Airport Free Zone
F12, PO Box 293666
United Arab Emirates, Dubai

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions, or if modifications were made to the product that were not authorized by Extron.

NOTE: If a product is defective, please call Extron and ask for an Application Engineer to receive an RA (Return Authorization) number. This will begin the repair process.

USA: 714.491.1500 or 800.633.9876
Asia: 65.6383.4400

Europe: 31.33.453.4040
Japan: 81.3.3511.7655

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.

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